



AND THE MILLING ENGINEER.

Fifteenth Year.—No. 3.

MILWAUKEE, MARCH, 1890.

Subscription Price, \$1.00 Per Year.

STILWELL & BIERCE MFG. CO.

—* DAYTON, OHIO, U. S. A. *

MILLING ENGINEERS

Manufacturers of the Celebrated ODELL ROLLER MILLS and a full line of

Flour & Corn Mill Machinery.

MILLS BUILT ON THE

ODELL SYSTEM.

Contracts taken for mills of any size, large or small, and results GUARANTEED.

Cawker's American Flour Mill and Grain Elevator Directory for 1890-'91

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E. HARRISON CAWKER, MILWAUKEE, WIS.

Will Certainly Give You the Order

After a Thorough Trial, Giving Perfect Satisfaction,

THE RICHMOND
Grain Cleaning Machinery

AND

BRAN DUSTERS.

TESTIMONIALS.

SHELLABARGER MILL & ELEVATOR CO.

DECATUR, ILL., January 8, 1890.

RICHMOND MANUFACTURING CO., Lockport, N. Y.:

Gentlemen:—We hand you herewith our Check No. 5160 for \$..... in payment of the enclosed invoice, which you will please receipt and return to us. We have given your machine a thorough trial during the past two months, and are pleased to report that it is giving perfect satisfaction in every respect. We are using some eight or ten Separators in connection with our elevators, and we are frank to state, that your machine is doing us better work than any other machine we have in use, and should we have occasion to put in another machine, will certainly give you the order. Wishing you success, we are

Yours truly,

SHELLABARGER MILL & ELEVATOR CO.

W. L. SHELLABARGER, Secretary.

H. C. COLE MILLING CO.

CHESTER, ILL., December 19, 1889.

RICHMOND MANUFACTURING CO., Lockport, N. Y.:

Dear Sirs:—We are using of the "Richmond" machines, one Warehouse Separator, four Scouring Machines and two Bran Dusters, all of which are doing good work. We know of no company who put better work on their machines than the Richmond.

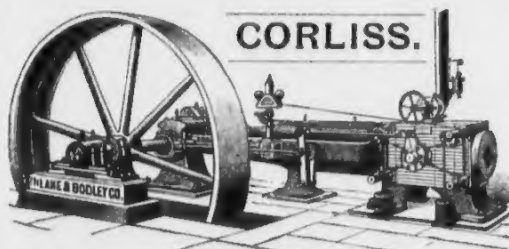
Yours truly,

H. C. COLE MILLING CO.,

Per H. C. COLE.

RICHMOND MANUFACTURING CO.
LOCKPORT, N. Y., U. S. A.

THE LANE & BODLEY CO.,



CORLISS.

MANUFACTURERS OF

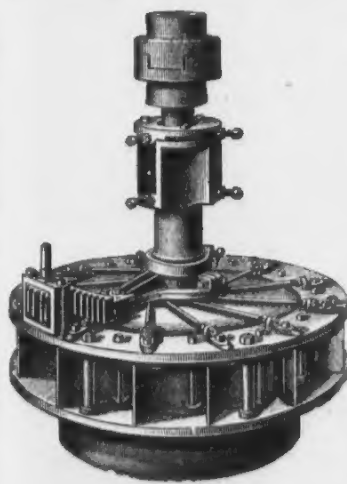
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From Heavy Patterns and of Unexcelled Workmanship.

Steel Boilers, Feed Water Heaters, Shafting, Pulleys and Gearing.

THE LANE & BODLEY CO., cor. John & Water Sts., CINCINNATI, O.



Leffel Water Wheel

Made by JAMES LEFFEL & CO.

The "OLD RELIABLE" with Important Improvements, making it the

Most Perfect Turbine now in Use.

Comprising the LARGEST and the SMALLEST Wheels, under both the HIGHEST and LOWEST Head in this country. Our New Illustrated Book sent free to those owning water power.

Write us for NEW PRICES before buying elsewhere. New shops and New Machinery are provided for making this Wheel. Address,

JAMES LEFFEL & CO.,

Springfield, Ohio, or 110 Liberty St., New York.

* THE *
"WESTERN"
MILL SHELTER.

The most Compact, Durable, Best Sheller and Best Cleaner.

Takes up but little room, runs at low rate of speed, requires no attention. It is in every respect the

Best Sheller ever offered to the Public.

e mention this paper. Write for full particulars to

UNION IRON WORKS, - DECATUR, ILL.

Mfrs. of "Western" Shellers, Cleaners, Separators, and all kinds of Elevator Machinery.



PERFECT SEPARATIONS!

IMMENSE CAPACITY!

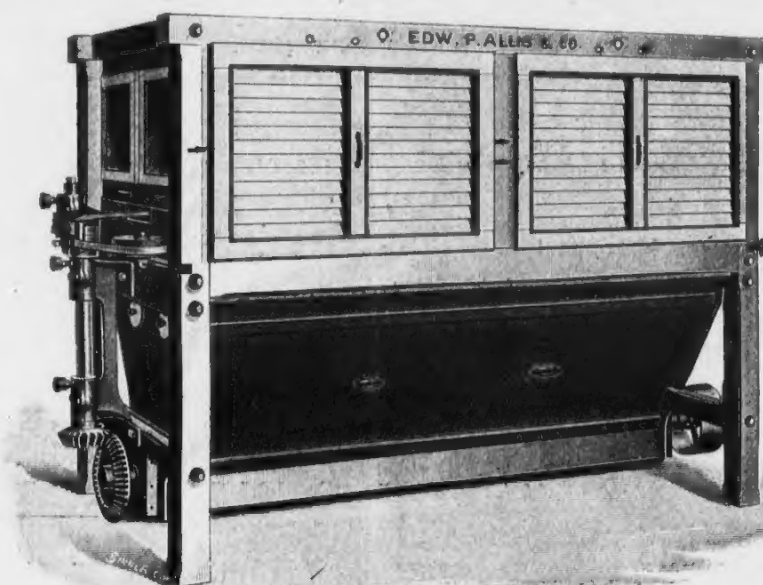
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IMPROVED RESULTS!

ONE machine will handle 5
Breaks in a 200 bbl. mill.

The best mill can be made
still better by using it.

The
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Sieve
Scalper

We want the best mills in America
to become acquainted with this ma-
chine, and solicit correspondence with
responsible parties relative to order-
ing machines subject to trial.

MANUFACTURED ONLY BY

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RELIANCE WORKS,
MILWAUKEE, - WISCONSIN.

The United States MILLER

AND THE MILLING ENGINEER.

Fifteenth Year.—No. 3.

MILWAUKEE, MARCH, 1890.

Subscription Price, \$1.00 Per Year.

THE IMPROVED "OLD RELIABLE" LEFFEL WATER WHEEL.

THIS Wheel consists of two independent set and kinds of buckets, one a vertical and the other a central discharge, each entirely different in its principle of action upon the water, yet each wheel or series of buckets receiving its water from the same set of guides at the same time; the water however is acted upon but once, since half the water admitted by the guides passes to one wheel and the other half to the other wheel, being nicely separated and divided by the partition or diaphragm between the two wheels, the water leaving both wheels or sets of buckets at the same time and as quickly as possible. These two sets of buckets are so combined as to make really but one wheel; that is both are cast in one piece and placed upon the same shaft. By this arrangement there is admitted the greatest possible volume of water, to a wheel of any given size, consistent with its economical use, at both full and part gates, and at the same time the greatest area for the escape of water is secured. The surface in the wheel is thus reduced to a minimum as compared with the quantity of water used, avoiding a very material loss by friction which otherwise seriously diminishes the working power of a wheel; an arrangement, the value of which will be appreciated by those who understand the practical effect of the frictional surface in a water wheel.

Among the most noticeable modifications and additions to be found in the improved pattern of the "Old Reliable" water wheel, and which give it especial value, are the improved link for operating the gates; the process for lining the iron plates with brass or any anti-corrosive metal (applied only when specially ordered); the combination of the toothed segment with the gate arm in such a manner that the segment can be removed when the teeth become worn, and a new one supplied; the spherical iron penstock; the use of steel gates or guides for some sizes instead of iron; and the improved method of casting solidly in one piece, both wheels, by means of which the edge of the diaphragm can be made much thinner, and yet stronger, assisting also to separate more perfectly the due proportion of water to each wheel, while enabling the buckets to successfully withstand the shock of blocks, stones and other rubbish to which they are so often subjected. Half the buckets being good boiler iron, and the fillets retaining them improved, both in form and strength, it is impossible to break or tear out any of them.

There are now over twelve thousand Leffel wheels in successful operation, giving over five hundred thousand horsepower. Is any stronger proof of their great merit needed? The Leffel wheel is a prime favorite for roller and other flouring mills, in fact always has been, and in its improved form is still better adapted to the wants of those depending upon water as a motor.

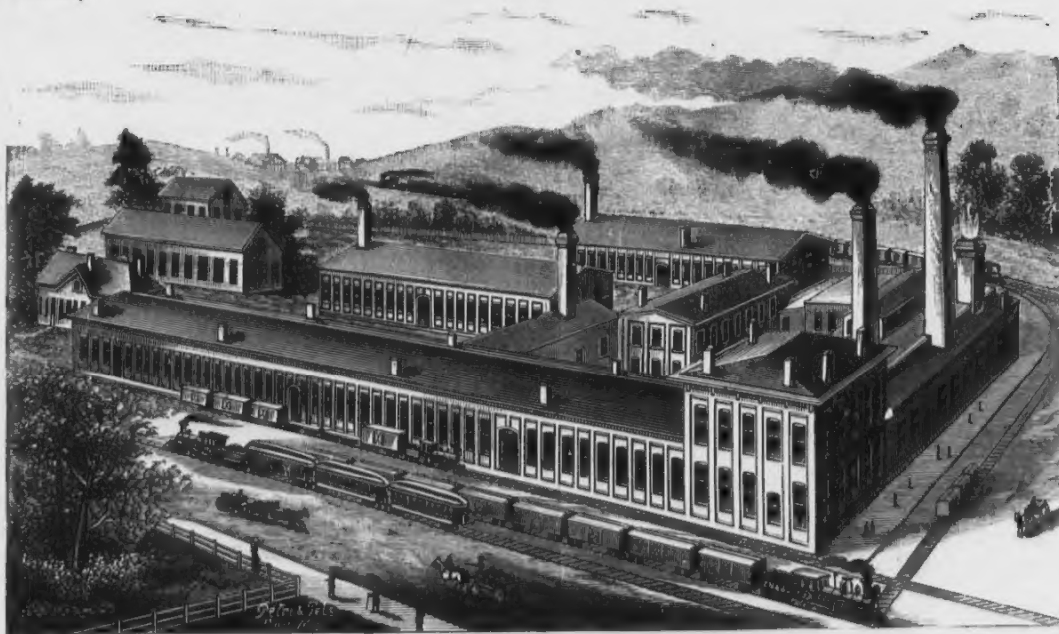
The manufacturers, Messrs. James Leffel & Company, began the manufacture of their now famous wheel some twenty odd

years ago in a modest way at Springfield, O., year by year increasing the production to meet the steadily increasing demand for it, until to-day they are an immense concern, doing a flourishing business both at home and abroad. So rapidly has their business increased of late that they have found it necessary to erect new, extensive and more convenient works, which have been fitted throughout with entirely new and expensive machinery especially constructed for the sole purpose of imparting to the wheel the necessary accuracy in workmanship and of reducing the cost of manufacture so as to enable them to substantially cheapen while really improving their machines.

Our readers should send for the latest issue of their Wheel Book. It contains much information and interesting data about water wheels, for millers and the manufacturing public in general.



LEFFEL IMPROVED "OLD RELIABLE" WATER WHEEL.



NEW FACTORY JAMES LEFFEL & CO., SPRINGFIELD, O.

WHEAT WASHING.

BY J. M. CASE.

THERE is one point connected with wheat cleaning worthy of consideration, and that is, "How far can the washing of wheat be carried to advantage?"

The washing of wheat performs two functions—it cleans it and also tempers it for grinding in cases of hard varieties. The necessity of the washer for Indian wheats and others of similar variety, which are both filthy and hard, is now recognized as an absolute necessity. But whether it would prove profitable to

wash all varieties of wheat is still an undemonstrated problem.

If soft wheats are washed, it must be by a process that would give the wheat an instantaneous but very severe dash through the water, giving it no time to absorb moisture to any extent, and then by the use of strong air currents to evaporate or expel the surface water. I am of the opinion that "Duluth," and all varieties of hard spring wheat, as well as all other hard varieties, should be washed to produce the best results. In flour mills, where

a sufficiency of water exists, a very effective device may be made for accomplishing this in the following manner: Let there be arranged a small rotary hydraulic pump, so that it will deliver its stream of water against a copper wire sieve. Then let the wheat be delivered into the water at the point of exit from the pump; this will carry the wheat against the sieve, the

it then becomes a question as to whether or not all wheats, except those which are very damp, cannot be improved by a system of instantaneous washing. I am inclined to believe they can. Dry bran pulverizes into fine particles by the scraping action of rolls; damp bran does not so much. And if we can dampen the bran evenly, and with so limited a quantity of water as not to affect the inner berry, we necessarily insure a broader bran, and whiter flour from the breaks. The process I mention being instantaneous, every berry is alike affected, which gives it double advantage over the dampening process, viz., that of perfect uniformity to dampen, to which must be added the benefit derived from washing. The question is an undivided one; time and experience alone will demonstrate whether or not I am right in my prediction, that ultimately all wheats, soft and hard—except those very damp and fresh from the thresher—will be washed before milling.

RUSSIA'S FIRST GRAIN ELEVATOR.

A St. Petersburg correspondent writes of the opening of the first Russian elevator at that city. He states that "the elevator at Eletz (the first built in Russia) has not been successful, and shows a loss for the first year of its existence of 17,000 rubles. Proceeding to describe the St. Petersburg elevator, he says it has been built on the left bank of the Sea canal, just below the Gootvoeff basin, New Port. There are three grain shoots, and the largest steamers coming to St. Petersburg can load under them, taking in 14,000 poods per hour. The elevator can take in 25 cars of grain per hour, and at the same time can also take in about 7,000 poods (one pood equal to 36.1131 pounds avoirdupois) per hour from lighters or other small craft. To permit of each seller keeping his goods separate from the rest there are 230 compartments, each having a capacity of from 4,500 to 5,000 poods of grain in bulk, and the door of each can be sealed up. Besides the 230 separate compartments there are storerooms which can take in 300,000 poods in bags and kools. It will thus be seen that when quite full the elevator can hold 1,150,000 poods of grain in bulk and 300,000 poods in bags and kools, or a total of 1,550,000 poods, equal to 23,500 tons of grain. The management of the elevator pays the rail freight on goods sent to them, and will advance money on all goods stored in bulk or in bags in their elevator. The

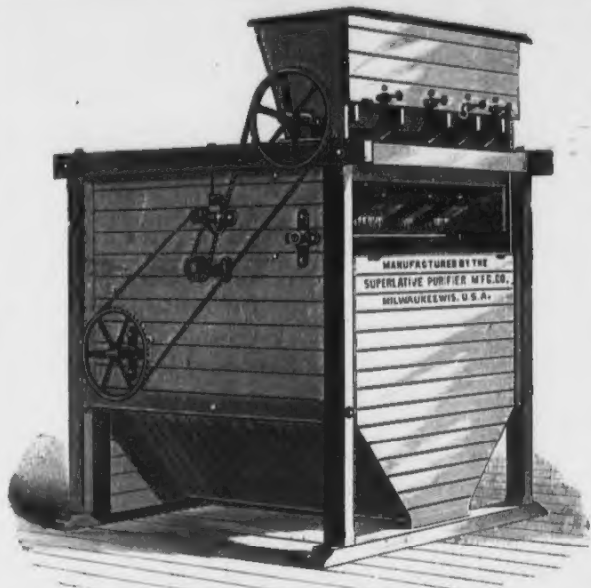
charges are: For loading from cars and discharging into steamers, 12 copek per 10 poods, but if loaded from lighters, then the cost is 11 copek per 10 poods. For storing grain in bags the rate is 1 copek per pood for every ten days that it remains there. The charges are not too dear, and the elevator has a good chance of paying well after merchants have got used to it. It will be of more use for grain coming by rail than by water, and what the Russians want now is to get the railway companies to build cars to carry grain in bulk and reduce expenses a little more, so as to allow Russian grain to compete on equal terms with American grain.

THOROUGHLY TESTED AND FOUND JUST AS REPRESENTED.

THE NEW ERA SCALPER

(Manufactured under Patents No. 420,728, 420,802, 420,803.)

Does not scour the bran or pulverize middlings, increasing 'patent' flour and improving other grades.



Occupies small space. Requires little power. One machine will handle 4 breaks in 100 bbl. mill.

Has greater capacity and does better work than any other Scalper manufactured.

GUARANTEED IN EVERY RESPECT. TRIAL ALLOWED

MILROY, IND., January 20th, 1890.

SUPERLATIVE PURIFIER MFG. CO., Milwaukee, Wis.:

Gentlemen—Enclosed find balance due you on New Era Scalper and Bran Duster I bought of you some time ago. The machines have been running daily now for five months; require very little attention, if any; run very light, requiring scarcely any power, and their work in general is entirely satisfactory in every respect—just as represented by your agent.

Respectfully yours,

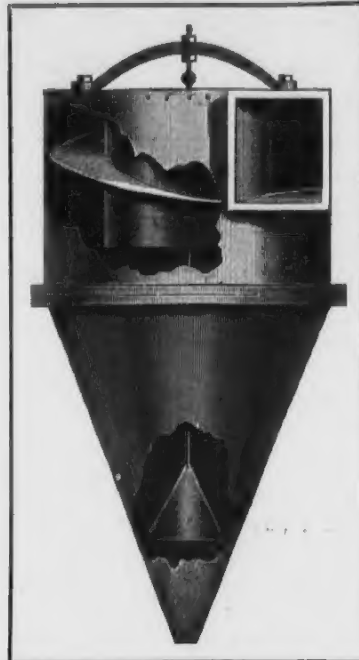
G. J. BICKHART.

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SUPERLATIVE PURIFIER MFG. CO.
MILWAUKEE, WIS.**VORTEX DUST COLLECTOR**

The best and most successful Dust Collector manufactured for Purifiers, Grain Cleaners, etc.

WE OWN PATENTS
COVERING THIS
COLLECTOR, AND
GUARANTEE
EVERY USER AND
PURCHASER
AGAINST ANY
INFRINGEMENT
SUITS, SHOULD
ANY BE BROUGHT.

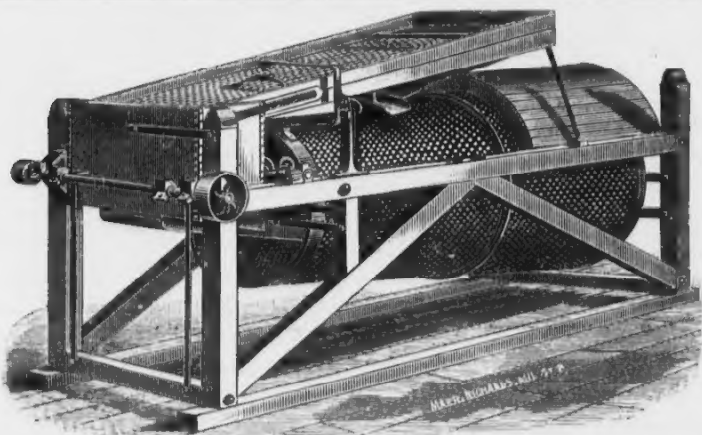


THE WORK OF
THIS MACHINE IS
GUARANTEED,
AND WE
WILL ALLOW
ANYONE TO TEST
IT THOROUGHLY
BEFORE
PAYING FOR IT.

PRICES VERY REASONABLE.

No royalty has been collected on any Dust Collector of our manufacture. We challenge anyone to name an instance.

FOR CIRCULARS, PRICES, ETC., ADDRESS

VORTEX DUST COLLECTOR CO.,
MILWAUKEE, WIS.**Kurth Cockle Separator**

Manufactured in three styles, either with or without Oat Separator attachment.

Thousands in use in all parts of the country. We guarantee these machines in every respect, allow trial where desired.

Our long experience in this line enables us to make a machine which is unequalled for thorough and effective work.

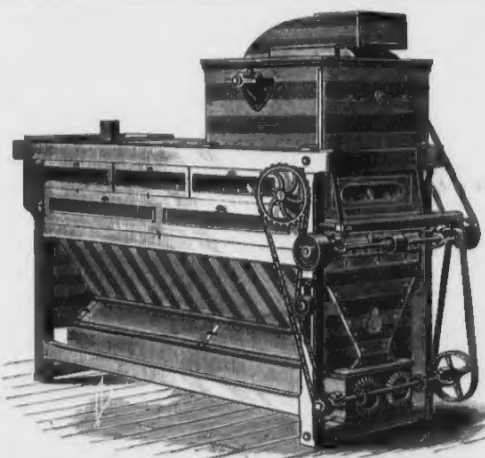
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COCKLE SEPARATOR MFG. CO.,
MILWAUKEE, WIS.

WE ALSO MANUFACTURE

THE MORGAN SCOURER**The Superlative Purifier**

Has been on the market for over five years and is running in hundreds of mills, and giving the best of satisfaction.



Guaranteed to do as good work as any Purifier manufactured.

WELL BUILT AND FINISHED. PRICES VERY REASONABLE.

We will allow any responsible miller a thorough trial of this machine. Its work speaks for itself.

FOR CATALOGUE, PRICES, ETC., ADDRESS

SUPERLATIVE PURIFIER MFG. CO.,
MILWAUKEE, WIS.

UNITED STATES MILLER AND THE MILLING ENGINEER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

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[Entered at the Post Office at Milwaukee, Wis., as mail matter of the second-class.]

MILWAUKEE, MARCH, 1890.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER AND THE MILLING ENGINEER. You will thereby oblige not only this paper, but the advertisers.

WE send out a number of SAMPLE COPIES of this issue. We solicit a critical examination of our Journal and invite you to subscribe. The price is one dollar per year. No premiums—no discount.

NOW that the Starch Manufacturers have organized a "trust" prices may be expected to stiffen up.

AN old and experienced grocer said to us recently, "half the complaints made of poor flour in this country arise from the fact that poor baking powder or poor yeast has been used."

THERE has been considerable talk of late about an English syndicate investing in Michigan mills. Parties who ought to know, however express the opinion that there is "really nothing in it" but talk.

THERE appears to be but little doubt now that the World's Fair in 1892 will be held in Chicago. It will be a glorious opportunity for the mill-machinery men to hold an Inter-National Exhibition of Milling Machinery, that is if they want work and glory.

W. C. HEPBURN, chief editor of the *The Miller*, London, died Feb 24, aged sixty-eight years. His connection with journalism lasted well-nigh half a century, and he is credited with having done much towards establishing and maintaining the British and Irish Miller's Association.

THE Michigan State Millers Association held a large and enthusiastic meeting at Lansing, March 25th. It is growing rapidly and from present indications a majority of the millers in the State will soon be on the roll of membership. M. A. Reynolds, the Secretary is enthusiastic in promoting the wood work.

THE Wisconsin Miller's Association will meet at the Plankinton House, in Milwaukee, April 8, 1890, at 2:30 P. M. It is highly desirable that not only members, but millers from every county in the state should attend this meeting. Matters of deep interest to the trade including patent matters will be discussed. Let there be a rousing big meeting. Come prepared to stay all night if necessary.

HIRAM DURYEA, of the Glen Cove Starch Company, estimates that the annual yield of the twenty-two principal starch factories in the United States is 200,000,000 pounds of starch and 70,000,000 pounds of glucose. He says: "Competition has become so strong in the corn starch business that it would now seem to be advisable and in the interests of the stockholders of the different companies to form an association for mutual protection."

THE action of the Iowa legislature in indefinitely postponing the 2-cent per mile railroad fare bill practically

determines that there will be no legislation this session adverse to the railroads, unless it is a bill to empower the commissioners to fix and enforce joint rates. Popular sentiment, which in Iowa two years ago was so strong against railways, has undergone a great change. Some new roads are wanted in Iowa, but they were practically out of the question while the spirit which dominated the legislature two years ago continued in force.

IT appears to be the universal opinion of both United States and British Consuls to foreign countries that the only way to successfully introduce articles of merchandise and machinery of any description is by means of commercial travelers able to speak the language of the country they desire to sell their goods in. It is deemed advisable to have central depots in each country from which orders can be filled promptly. German manufacturers do this and meet with great success.

SOME of our contemporaries suggest that now would be a good time for the "Big 4" and the "Big 5" to quit fighting and compromise. It appears to us that the parties interested are old enough, big enough and experienced enough to attend to their own business. There is always an unsavory odor to unsolicited advice. As a matter of fact, so far as millers outside of the Association are concerned, a "Big 9" would appear to be more formidable than a "Big 4" or "Big 5." The fight is getting interesting and spectators ought not to interfere.

WHEN we read that there are now over 1,600 cases awaiting trial by the U. S. Supreme Court, that the new cases going there every year average about 600, and finally that only about 400 are adjudicated per year, it seems as if something ought to be done to change this order of things, so that justice might be meted out more promptly. There is a bill now before Congress to establish another Court that shall relieve the U. S. Supreme Court of more than half the present demands upon it. By all means let it pass. In patent matters especially, it is desirable to have suits decided promptly.

THE flour trade of the West Indies is of considerable value to the milling interests of this country. Flour and oatmeal rank prominently among the imports of the West Indies. Some idea of the flour demands may be obtained from the fact that at the port of Georgetown alone, the average monthly consumption reaches 11,000 barrels, while the yearly statistics show the imports at this port to be 138,744 barrels, and of corn and oatmeal 1,366,474 lbs. An effort is being made by Canadian millers to capture this trade, but we think with little prospects of success. Some millers think that spring wheat flour will keep in that climate, when made by the modern process, while others doubt it.

CAWKER'S American Flour Mill and Grain Elevator Directory for 1890-91, was issued March 7. It shows that there are 15,998 flouring mills in the United States. It also contains a Canadian milling list of 1,147 names. In thousands of instances, the capacity in barrels per day of 24 hours, the kind of power used, system (stones or rollers or both), name of mills, etc., are given. It contains also lists of miscellaneous mills such as, corn, oatmeal, etc.; also list of millwrights. The list of grain elevators is very full and complete. Millers will be especially interested in the very extensive list of flour and grain brokers, wholesale dealers in flour and millstuffs and large baking establishments. The list covers the entire country and the greatest care has been used to insert only dealers of considerable capital and good credit. For exporting millers, the export lists are all that could be desired. The work is indis-

pensable to millbuilders and furnishers, millers, flour and grain brokers and to anyone desiring to reach the trade in any or all its departments.

OUR readers will remember that two months ago we announced that J. H. Russell had brought suit against a Wisconsin miller for use of the Geo. T. Smith middlings purifier patent, a large interest in which, for certain territory including Wisconsin, he claimed to own. J. O. Kendall & Co. of Hartford, Wis. are the millers sued and are members of the Association and the Association will no doubt see that their interests are protected in the best manner possible. Messrs. J. O. Kendall & Co. have retained N. C. Gridley of Chicago, who had long and valuable experience in the former purifier and Cochrane litigations of the Millers National Association to defend, and is thoroughly acquainted with the details of the whole matter. We do not pretend to know the merits of the case but think that it is more annoying than dangerous. We shall endeavor to keep our readers thoroughly posted as the litigation progresses. Hon. G. W. Hazelton of Milwaukee is Mr. Russell's attorney.

THE International Bill of Lading which millers and flour importers agreed upon as satisfactory at the Miller Convention in Buffalo in June 1888, and which was quietly pigeon-holed for reasons not definitely known to us and never we believe satisfactorily explained to anybody, will doubtless not only be a matter of protracted discussion at the Millers Convention in Minneapolis in June next, but "we miss our guess" if millers do not take such action as will bring the transportation companies to reasonable terms. The railroad companies are generally open to conviction but the ocean lines have had their own sweet will so long that they persist in turning a deaf ear to a simple and fair demand. The trite old saying, "There are more ways than one to skin a cat" will be demonstrated to be true. The world moves and customs change, no matter how long they may have been observed. The present Bill of Lading is a relic of times and conditions long past. What is wanted is something as simple and as plain of understanding as an ordinary promissory note. The Millers National Association is the only body that can attempt with any show of success to bring about this much needed reform and we believe it can and will do it.

THERE are about 16,000 flour mills in the United States. The total wheat crop of 1889, was 490,560,000 bushels. Suppose the average capacity of these mills was but 25 barrels per day, and that they used an average of 4½ bushels of wheat to the barrel; that would use up 1,800,000 bushels of wheat per day and the total crop of 1889 would be ground out in 272 days—about 9 months. In this calculation, wheat exported, used for seed or lost by shrinkage, fire or otherwise, is not taken into consideration. Granting the fact that the average capacity of a mill is nearer 50 barrels per day, than 25, and deducting exports, seed and losses, we think that a 500,000,000 bushel wheat crop could (with present milling capacity) be easily floured in 100 days.

What conclusion must be drawn from this state of things? Simply, that of the mills now existing it will be a case of "survival of the fittest." The near future will show consolidations of large milling interests under one management, thus reducing expenses to a minimum, enabling American flour to compete successfully with the product of any country; it will relegate many a small mill or badly constructed large one, to a state of "innocuous desuetude." As heretofore, small mills may yield a profit and large ones may hopelessly fail. It is a question of location, circumstances, machinery and management, but there is no denying the

fact that mills in many localities are far too numerous and are burdens to their owners. No man of good judgment will at this day build either a large or small mill, unless he is able to build it on the most approved modern plan in a good location. We predict in the next two years a heavy decrease in the total number of mills now operated and the building of many first-class modern mills, both large and small.

THE sub-executive committee of the Miller's National Association met in Chicago, Feb. 20th, with nearly all members present. It was decided to hold the next annual convention in the city of Minneapolis, Minn., from June 17 to 20. The general Executive Committee is requested to meet there June 16th, the day preceding the opening of the convention. Sec'y Frank Barry has obtained a rate of one fare for the round trip from points controlled by the Western Passenger Association to Minneapolis which includes Chicago, St. Louis, Omaha, Kansas City, etc., and it is probable that a similar rate will be obtained between Eastern points and Chicago. It is hoped that this very low rate, lower than has been obtained for several years, combined with the fact that this meeting will be a very important one to all millers in the United States will cause the largest attendance ever had at any convention of the Millers' National Association. It is proposed to entirely reorganize the Association and place it on a thorough business basis. A revision of the constitution will be adopted and many matters of business importance will be taken up and decided upon. An effort is being made to secure some very interesting addresses to be delivered on that occasion. There is no question as to the hospitality of the Minneapolis people.

In regard to the railroad fare for the round trip which has been obtained we wish to say that in spite of the appeals which have been made to the Western States Passenger Association this year, as well as in the past, no recognition has been given by the railroad companies to the fact that millers are the most valuable patrons which railroads have and their request that they receive the same concessions in this direction that are being constantly extended to local firemen's associations, militia companies and the like have been curtly, though possibly courteously declined. Sec'y Barry's railroad experience enabled him to know that there were different ways in going at things of this kind and his efforts resulted in the Wisconsin Central R. R. Co.'s taking the initiative, closely seconded by the Chicago and Northwestern R. R. Co. in granting the desired rate. Millers should not forget the courtesy, good will and business common sense shown by these companies.

In regard to the Export Bill of Lading the sub-executive committee decided to appeal to flour exporters of this country as well as the European buyers to at once place in the hands of the Secretary of the M. N. A. all possible points of information and data regarding abuses suffered at the hands of export lines. We trust that millers who have suffered any delays in foreign shipments will respond to this at once to Sec'y Frank Barry, Milwaukee, Wis., as it will materially assist him in his labors for the benefit of the trade, and it is probable that a hearing will be obtained before the Inter-State Commerce Commission at which time this data will be used as evidence of the injury being done to the export trade of this country and an effort will be made to secure the passage through Congress of a bill, which will effectively regulate the delays which occur through permitting flour to lie for an indefinite period in the docks at the seaboard before delivery to trans-Atlantic lines.

(From our own Correspondent.)
OUR ENGLISH LETTER.

BY far the greatest factor in the annual result of the labors of the farm, is the weather, which regarded solely as a process for cultivation, has really been favorable, although the dykes of February have not been filled by a persistent rain or snowfall. The keener and drier wind from the northeast has put wheat into a better condition, and at the present time the wheat markets throughout England have a characteristic firmness, caused partly, no doubt, by the unfavorable reports of the growing crop in India and California, and the reduction in the estimate of the Australian surplus as well as the falling off of actual and prospective imports. Each successive report on the Russian wheat crop of 1889, shows it is less, and less in quantity. The Russian department of agriculture according to *Beerbohm*, has just issued an estimate of the wheat crop of European Russia, exclusive of Poland, as follows: Wheat, 1887, 33,624,000 qrs., 1888, 35,747,000 qrs., 1889, 21,600,000 qrs. The surplus of the old wheat after two great crops in succession, has been so large that the Russian shipments of that grain since August 1st, have not fallen off as much as might have been expected. During the six months beginning with that date, the quantity sent to all importing countries, has been 5,367,000 qrs., as compared with 7,231,000 qrs., in the corresponding period of the previous season. It may be expected now, however, that Russian exports of wheat will fall off considerably for the rest of the cereal year. Barley harvest reports have proved themselves untrustworthy in the case of the Australian wheat crop, which was to have been the greatest ever raised. In South Australia, the *Adelaide Observer* reports this threshing as very disappointing, a great deal of the grain being small and shrivelled, and the yield much less than was expected. The *Melbourne Leader* gives county estimates for Victoria, the total of which is a production of 11,254,000 bushels from 1,180,000 acres, or only 9.53 bushels per acre, which is considerably below an average yield. Estimating the population at 1,140,000, and the consumption at five and a half bushels per head, and allowing 1,250,000 bushels for seed, the surplus is only 3,734,000 bushels. The harvest is described as one of the most disappointing on record. Reports from New South Wales are more favorable, but those from Tasmania are to the effect that the farmers are almost unanimous in representing the wheat crop as a very disappointing one. At the several Corn Exchanges, I visited during the past month, in discussing the reason for the firm tone of the market, it was generally admitted to be due to the very unfavorable reports to hand from the colonies and Russia.

During my rapid movements, I could not help being impressed by the complete absence of uniformity of weights and measures, in the different parts of the United Kingdom, as if the several districts were isolated from each other as they were 200 years ago. As a specimen of market reports. At Mark Lane wheat was quoted last week at from 29s to 36s per imperial quarter of 480 lbs.; at Manchester and Liverpool, it was 6s 2d per cental, 100 lbs.; at Dublin, 20s per 250 lbs.; at Leeds, 37s per 540 lbs.; at Wolverhampton, 4s 9d per 72 lbs.; at Gloucester, 4s 4d per 62 lbs.; at Darlington, 9s 3d per 126 lbs.; at Coventry, 13s per 186 lbs. Other kinds of grain as well as pulse are sold in the same confusing system. The people of England are to be congratulated in having brought forward a bill during the present session of Parliament to effect an equalization of weights and measures.

The action of Van Gelder, Apsimon & Co., vs. the Sowerby Bridge United District Flour Society, Limited, which I mentioned in my last letter, has

resulted in judgment being given for the defendants with costs, as the plaintiffs were unable to get all the mortgagees to give their consent to become parties in the action. By this decision Mr. Simon, who was the real defendant, has secured an easy victory.

Under the title of Appleton, French & Scafton, Limited, a new company has been formed to acquire milling properties at Stockton-on-Tees and Middlesboro'. The payment to the vendors is fixed at £209,000 including £53,000 in shares. 21,400 ordinary shares of £5 each, and £90,000 five per cent. mortgage debentures of £100 each, have been offered to the public during the past two days. This company is formed to acquire the following:

R. H. Appleton's freehold, Cleveland; Steam Flour Mills, South Stockton-on-Tees; and his leasehold, North Shore Mills, Stockton-on-Tees; Thomas French & Co.'s freehold; Tees Steam Roller Flour Mills, Stockton-on-Tees, and their leasehold; Priestgate Mills, Darlington; Scafton Brothers' copyhold; Holdforth Roller Flour Mills, Bishop Auckland, and their leasehold; Packet Wharf Roller Flour Mills, Middlesboro'. The business of Mr. Appleton was commenced in 1818, and the capacity of his mill is now 5,500 sacks per week.

The Tees Roller Mills were established many years ago. When Mr. French purchased these mills in 1882, the capacity was 600 sacks per week. Extensions were completed in 1887, increasing the capacity to 1,400 sacks per week. Messrs. French's Mills at Darlington, have a capacity of 550 sacks per week.

Messrs. Scafton Bros' mills, Bishop Auckland, were established in the year 1870 and had then a capacity of 200 sacks per week. Since that time important improvements have been carried on increasing the capacity to 1,000 sacks per week. The Packet Wharf mills at Middlesboro' were taken over by Messrs. Scafton Bros. in 1888, when the output was 500 sacks per week, since which time a large expenditure has been made upon the property making the present output 1,200 sacks per week. The total capacity of the foregoing mills, which are all fitted with the roller process is 9,650 sacks per week. All the mills have excellent and convenient arrangements and facilities for obtaining wheat and dispatching flour, and the warehouses are capable of containing 40,000 qrs. of grain. The production of the mills are said to have been during the last three years as follows:

YEAR.	SACKS OF FLOUR.
1887.....	354,876
1888.....	410,430
1889.....	441,569

which shows an important increasing production. The directors of this new company are:

Richard Henry Appleton, Esq., Stockton-on-Tees, Chairman,
Thomas French, Esq., Darlington,
Robert Scafton, Esq., Middlesboro',
John J. Scafton, Esq., Bishop Auckland,
Arthur William Walker, Esq., (Robert Proctor & Sons, London, Liverpool and Hull, Corn Merchants.)

From the foregoing list your readers will notice that some of these gentlemen were to have been directors of the North-eastern Milling Syndicate, which met with such adverse criticism, and ultimately collapsed without ever being formally put before the public, about a year ago. Competition in the milling trade in Northumberland, Durham, and North Yorkshire is extremely keen, and it is practically certain that the struggle for business will be closer and sharper in the immediate future than it has been in the past because the very formidable co-operative milling undertaking will shortly be in the field.

Mr. J. S. Hillyer, President of resident representatives of North Dakota Millers' Association, of North Dakota, U. S. A., has taken an office at 14 Corn Exchange Chambers, Seething Lane, London, E. C., and is very busy pushing America to the fore.

A provisional agreement subject to the confirmation of the shareholders, which

the directors hope to obtain at a meeting to be held by them very soon, has been entered into as the result of a lengthy negotiation between the directors of Messrs. Spiler & Co., Cardiff, (Limited) and William Baker & Sons, of Redcliff Flour Mills, Bristol, for the amalgamation of the two businesses. Messrs. Spiler & Co. are already among the very largest manufacturers of flour in the United Kingdom, and also very extensively engaged in the grain trade, while Messrs. Wm. Baker & Sons are, next after them, the leading millers in the west of England; and I learn that the two firms have disposed of the products of their mills in practically the same district. It is estimated that the combined output of the two concerns is now about 18,000 sacks of flour per week, so that the business done in flour alone will scarcely fall short of a million sacks per annum. It is anticipated that the amalgamation, by avoiding the double expenses which are necessarily incurred while the two businesses are carried on in competition, will secure the advantage of reducing expenses to a minimum.

Messrs. Fletcher & Haslam held a public sale of 9,147 half-sacks of various brands of American flour, and 414 sacks of English flour on the 17th of February, at the London Commercial Sale Rooms, Mincing Lane, London, E. C., and the same firm announces another sale of flour for Monday next. L. MAYGROVE.

London, March 7, 1890.

N EWS.—It is said to be quite probable that Minneapolis millers will secure the location in their city of a branch of the Anchor Mfg. Co., of Detroit, to manufacture one-stave barrels for flour and other articles.

At Meaford, Ont., Feb. 20, the People's Milling Company's mill was burned. Loss \$30,000; insurance \$15,000.

RATS in great numbers have been infesting Milton, Ia., of late. The citizens concluded to organize a great rat hunt, and 4,000 rats were killed the first day.

A company has been incorporated for the purpose of building a new mill in place of Saxton & Thompson's in Lockport, N. Y. The capital stock is \$80,000.

THE contract has been closed for the construction of a dam across the Missouri river, near Black Eagle Fall in Montana, which will develop 30,000 horse-power.

THE Vortex Dust Collector Co., report a large increase in orders the last two weeks, with every prospect of a continuance. Among other recent shipments was one of four machines to Ireland.

AT Hillsboro, N. D., March 2, Gill & Forrest's roller mill was burned, together with 2 cars of wheat. The mill was the property of the Daisy Roller Mill Co. of Milwaukee. Loss about \$50,000; nearly covered by insurance.

It has got to be a fashion in Duluth of late to send out entire trains loaded with flour and the cars gaily decorated with streamers and signs advertising the virtues of the unequalled flour produced by Duluth mills, from "No. 1 Hard."

MR. T. J. ARCHER, of Tulsa, Indian Ter., writes that a grist mill and cotton gin is wanted there; that there is sufficient patronage to support well a \$10,000 or \$15,000 investment, and that the chief Indians will grant concessions in the way of site etc.

AT Terre Haute, Ind., Feb. 15, the complete flouring mill of the Terre Milling Co., composed of W. L. Kidder & Sons, capacity of 600 bbls. daily, was burned, causing a loss of \$100,000 on buildings, machinery, 2,000 barrels of flour, wheat and other stock. Insurance about \$40,000, mostly in Millers' Mutual companies.

THE Cockle Separator Mfg. Co., of Milwaukee, Wis., last month shipped Cockle Separators to the following parties: Ypsilanti Machine Works, Ypsilanti, Mich.; R. H. Thomas, Sheboygan Falls, Wis.; Nordyke & Marmen Co., Indianapolis, Ind.; Smith & Richardson, Minneapolis, Minn. They also report a good trade on repair work and general supplies.

THE Superlative Purifier Mfg. Co., of Milwaukee, Wis., have recent orders for New Era Scalpers from the following parties: Bazil Mill Co., Bazil Mills, Neb.; Levi Thacher, Preston, Neb.; Florence Mill Co., Stillwater, Minn.; Seiberling Mill Co., Akron, O.; (2 machines); Horn McElroy & Co., Richmond, O.; W. W. Cockley & Co., Lexington, O.; (2 machines); A. A. Freeman & Co., La Crosse, Wis.; (1 No. 2 sieve machine); Wilson

Milling Co., Adrian, Mich. Alliance Milling Co., Alliance, Neb.; Van Epps & Cox, Fremont, O.; Mosely & Motley Milling Co., Rochester, N. Y., (the ninth machine this company is using); Shelby Mill Co., Shelby O. (2 machines); Essmuller & Barry, St. Louis, Mo.; C. C. White, Crete, Neb.; C. B. Palmer, Middleton, O.; Wm. Elwell & Son, Sheboygan, Wis. (2 machines); Isaac Harter Co., Fostoria, O.; Warder & Barnett, Springfield, O. (3 machines).

THE efforts of the Commercial Club to increase Kansas City's milling interests now bids fair to be crowned with success. The milling committee of the club will prepare a report, which will be submitted at an early date, showing that mills will be built there and that soon. Companies are to be formed with Mr. W. G. Boorman, the Mauston, Wis., miller, as a heavy stockholder.

A NEW manufacturing town called Charle-roi, has been laid out at McKean station, near Pittsburgh, Pa. Contracts aggregating \$7,000,000 have already been made. The largest plate-glass works in the world will be established there and many other factories. Plans are being prepared for 2,000 residences and a new city with thousands of inhabitants will soon be an established fact.

OR the recently incorporated National Starch Manufacturing Company (in Kentucky) it is said that "it is not a trust but a corporation, and embraces all the starch factories in the United States to the number of thirty, with the possible exception of one, which the speaker said he hardly felt at liberty to name. These properties are scattered over the country as far west as Iowa and as far east as New York, and all are North of Mason and Dixon's line. The largest are at Buffalo and Cincinnati, and the greatest number are found in Indiana. They have been bought outright and entire—real estate, buildings, special patents and trade-marks—for cash, not for speculation, but in the line of legitimate business investment, the purchasers being given a deed in warranty, and the speaker's understanding was that all will run as now, each preserving its original prestige and trade-marks. The board of directors will be chosen by the stock-holders as soon as the thirty-days' advertising limit, called for by Kentucky law has been passed over, and the headquarters will be in Covington." Another telegram says that there are two large starch factories not in the combination, one at Buffalo and one at Oswego, N. Y.

MILLING IN KANSAS.—Commissioner Betton of the Kansas Bureau of Labor and Industrial Statistics, has compiled, for his forthcoming annual report, some very valuable statistics regarding the milling industry of the State, which he has treated separately, the commissioner regarding this as the most important branch of local industries.

Two hundred and twenty-four mills, with a capital of \$6,401,552 make reports. These mills use 1,381 sets of rolls and 261 pairs of buhrs in the manufacture of flour. Only 15% per cent. of the product was ground by the buhrs, and this chiefly in the form of corn meal. The Commissioner regards buhr flour as a thing of the past so far as Kansas is concerned.

Kansas has many first-class mills, fully equipped with all the latest inventions in the way of machinery, and more are in process of construction. One mill reports an invested capital of \$165,000. Eight range from \$100,000 to \$150,000, nine from \$75,000 to \$100,000, seven from \$50,000 to \$75,000, fifty-two \$25,000 to \$50,000, and the rest represent smaller amounts. The business of flour making is increasing in the larger cities of the State, and Kansas flour already has a well-established reputation in Europe. Nearly 3,000,000 barrels were produced during the year ending June 30, 1889. The average cost of grain was 72 cents, and about 15,000,000 bushels were ground.

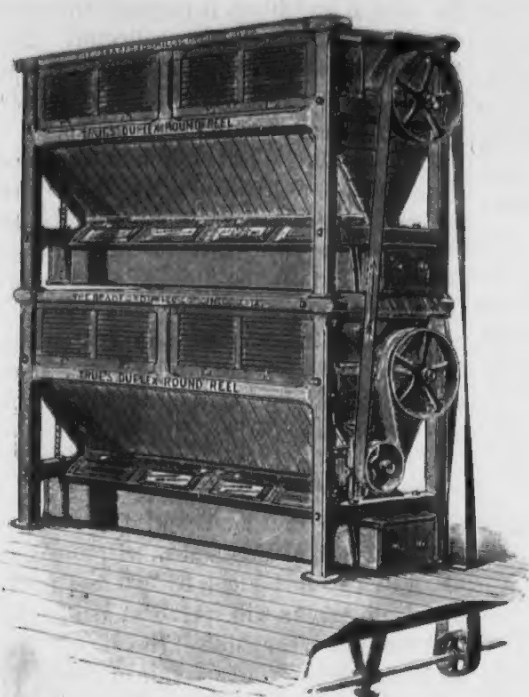
This part of the report is very valuable, especially to millers, and it is to be regretted that a larger edition is not published.

GREAT SIOUX RESERVATION NOW OPEN.

The fertile lands in the Great Sioux Indian Reservation, west of the Missouri River are now open for settlement. The President's proclamation was issued on February 10th, 1890. The natural gateway to the southern part of the reservation is via Chamberlain. South Dakota, the present terminus of the Chicago, Milwaukee & St. Paul Railway. From that point to the lands beyond, home-seekers must proceed by team. All necessary outfits can be secured at reasonable prices at Chamberlain.

For convenience of persons who may desire to inspect the new country, first-class reduced rate excursion tickets, to Chamberlain and return, will be sold from Chicago, Milwaukee and other points on the Chicago, Milwaukee & St. Paul Railway, good to return until October 31st, 1890.

For maps and circulars, containing general and detailed information, please apply to the nearest ticket agent or address A. V. H. CARPENTER, General Passenger Agent, Milwaukee, Wis.



THE BRADFORD MILL CO.

* CINCINNATI, O. *

Mill Builders and Mill Furnishers.

Dunlap Bolt.

MANUFACTURERS OF THE CELEBRATED

True's Duplex Elevating Scalpers.

True's Duplex Elevating Flour Dressers.
Deobold's Scourer and Polisher.

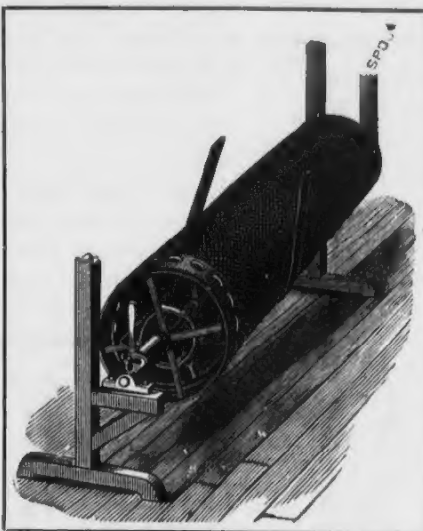
Contractors for Complete Roller Mills on the Short, Medium or Long System

ROLLS RE-GROUND AND RE-CORRUGATED.

WRITE FOR CATALOGUE AND ESTIMATES.

NOTE THIS!

The suit brought by Wm. E. Lee, of Long Prairie, Minn., against C. A. Pillsbury & Co., for infringement of a cockle separator patent which he controls, was tried in the United States Circuit Court at St. Paul last week. A verdict of \$1,500 was given in favor of the complainant.—NORTHWESTERN MILLER, Feb. 28.



WE MANUFACTURE THE

Prinz Patent Improved Cockle Machine

Which is licensed under Lee's patent, the validity of which was shown in the suit aforesaid.

We guarantee this machine to be the best in every particular in the market.

WRITE FOR PRICES AND PARTICULARS

THE PRINZ & RAU MFG. CO., MILWAUKEE, WIS.

INCREASED STRENGTH OF CHAIN CABLES.

SEVERAL important changes were made by the United States Government in the last specifications for so-called lightship cables. The most essential was that relating to the breaking strain, which was ascertained by the following formula determined by Lieutenant Mackenzie:

$$\left(\frac{\text{dia}}{4}\right)^2 1,000,000$$

This for a 2-inch cable gives a breaking strain of 250,000 pounds, which is a most decided increase over any of the requirements prevailing in Europe, the highest of which for a similar chain is that of the English Lloyds, where the breaking strain must be 225,000 pounds. The Government also required for the first time, a breaking test of three links taken at random, and also a test of the whole cable up to one-half of the required breaking strain—that is, the entire length of cable, each of which measures 120 fathoms, must be subjected to a strain of 125,000 pounds in the case of the 2-inch. Eight lengths were called for, two each of the following diameters: 1½, 1½, 1½ and 2 inches. It was not certain that the requirements could be met, and but one bid for the work was received—that of Bradlee & Co., of Philadelphia, at whose works the cables are now being made. That these fears were unfounded was shown by a test of three links taken from a completed 2-inch cable and tested on the Watertown machine. The breaking strain was 274,200 pounds, or 10 per cent. more than was needed. The iron for these cables is made by Hughes & Patterson, of Philadelphia. It gives a good weld, is homogeneous and has the required tensile strength.

The links are welded at the ends, which are always the weakest parts, as proved by the break always taking place there. It is more than probable that the action of the Government in increasing the strength of cables will cause manufacturers to abandon the end weld so

almost universally used in this country, and adopt the side weld in vogue across the water. In the end weld, it is an extremely hard job to perfectly unite the inner surface owing to the difficulty of supporting the link on the anvil while striking. This in a great measure would be obviated by the adoption of the side weld and should therefore add correspondingly to the strength of the chain.

SHORT WEIGHT FLOUR.

THIS is a subject to which we have heretofore referred, and though complaints have been frequent in this and presumably other markets, we have noticed only one pointed comment touching the dishonesty, and that came from New Orleans. Honest millers will, of course, aid in righting this gross wrong, and a western mill was good enough to show its appreciation of our efforts to secure full weight, but there was only one firm. The barrels come here improperly tared, and frequently not tared at all; the houses receiving are always anxious to hide the name of the miller; and there is some protection to the trade when the maker brands his goods with his full name and locality. There is less of the mill branding now than ever, and nearly every dealer of prominence uses an individual brand. There is more flour being sacked from barrels by jobbers than ever before, and the opportunity for the discovery of light weight is therefore greater. We saw a list of weights of a carload of Western flour a few days since where the barrels were improperly tared, and the loss in weight ran three to four pounds per barrel. The commission merchant referred the matter to the miller, and he claimed the flour was all right, and stated that this was the first complaint ever reported, and that in his shipments to a sister city out-turn had been always satisfactory. As we have heretofore noted competition between commission merchants hampers that strict justice which should be meted out to offenders, and it may be necessary to have a few manufac-

tors face the law in order to purify the trade and give honest men their due. Mistakes may be rectified and may occur, but if there is systematic swindling going on among a few unrighteous, the many just should combine to drive the offenders out of the business. Publishing their names would purify the record.—Baltimore Journal of Commerce.

TRADE NOTES.

THE J. B. Allfree Co., of Indianapolis, Ind., have secured the contract for building a 125 barrel mill for Messrs. John D. Church & Co., on Washington St., Indianapolis. The competition was close, but the Allfree system was victorious.

THE JEFFREY MFG. Co., of Columbus, O., has gotten out a new catalogue and price list for 1890. It is a handsome book of 200 pages, containing a fine line of illustrations and descriptions of their different styles of conveying and elevating machinery. It is furnished on application.

THE Menasha Wood Split Pulley Company, of Menasha, Wis., received orders last week for their hard-wood pulleys for the Northwood Glass Company, Martin's Ferry, O., Ohio Valley Foundry Company, Mansfield, O., Canfield Manufacturing Company, Canfield, Ohio, Stambaugh-Thompson Company, Youngstown, Ohio, and numerous others.

THE PRINZ & RAU MFG. Co., of Milwaukee, Wis., manufacturers of the celebrated Prinz Pat. Improved Cockle Machine, have made an amicable settlement and are now licensed under the Lee Patents, which have been tried and sustained in the United States Court at St. Paul. In this suit Wm. E. Lee, of Long Prairie, Minn., secured a verdict of \$1,500.00 against C. A. Pillsbury & Co. for infringement of a cockle separator patent which he controls.

A COMPANY for the exclusive manufacture of steel boilers of all types has been formed, consisting of F. F. Cleveland and Wm. Hardwick, of the firm of Cleveland & Hardwick, and L. G. Skinner and Frank Connell, of the Skinner Engine Co., to-

gether with H. R. Barnhurst, late of the Stearns Manufacturing Co., all of Erie, Pa. The brick building, 60x150 feet, is now under way and will be fully completed in about two weeks. All of the machinery has been ordered of the most modern type, and will be in place and ready for business within 60 days.

MESSRS. H. W. CALDWELL & Co., 131 and 133 W. Washington street, Chicago, manufacturers and dealers in supplies for flour mills, grain-elevators, cottonseed oil mills, starch works, cement works, rice mills, sugar refineries, and power transmission appliances generally, have recently issued one of the neatest and most complete catalogues that we have had the pleasure of seeing. It should be hanging within the reach of every one using this class of goods for ready reference. A copy will be sent to millers or elevator men upon application.

AMONG the remarkable examples of bold engineering in the great sugar refinery of Claus Spreckels, at Philadelphia, Pa., one of the most unique is the hanging or aerial steam engine foundations. The engines used in this establishment are distributed practically all over the buildings, a large proportion of them being on upper floors. Some of these engines are bolted to iron beams or girders on second and third stories of the building, and are consequently innocent of all foundation. Some of these engines ran noiselessly and satisfactorily, while others produced more or less vibration and rattle. To correct the latter, the engineers simply suspended foundations from the bottoms of the engines, so that in looking at them from the lower floors, they were literally hanging in the air. A foundation does service to an engine or any machinery, it seems, by its weight alone; hence it makes little difference whether the foundation be firmly imbedded in mother earth or in the air.

THE publisher of the UNITED STATES MILLER is desirous of having the names and addresses of Head Millers, Millwrights and Head Engineers in all mills having a capacity of 150 bbls. per day or more.

(From our regular Correspondent.)

OUR BUFFALO LETTER.

F all the dull times, this is the dullest. A slight spurt in flour was experienced when wheat took a sudden spurt, but dropped again when the market fell off. As to prices, it is impossible to unravel the mysterious workings of our millers. Patent Spring is quoted as high as \$6.00 in some cases while others are willing to take considerably less. Winters are dead except at prices which will not allow a milling profit. This latter complaint is general. If Europe would only get up one of those old time "war scares" it is thought that some of our surplus flour could be worked off.

The sensation of the month was the demand of the Cooper's Union, for the destruction of the one-stave barrel. A paper in this city which coddles to the working-men's Unions has taken up the side of the coopers and at a meeting held at its call it was decided to boycott all flour contained in the one-stave package. Millers are in a quandary concerning the outcome of this foolish fight. Millers are receiving orders requesting shipments to be made in this barrel and under the circumstances they are alarmed lest the flour should be returned. Of all the handsome packages, this is the handsomest; in fact it is an ornament. To fight this new barrel is one of the silliest undertakings of a Trade Union. It is undoubtedly the coming package if present material and workmanship is adhered to. Thank Heaven! There is nothing to prevent the use of paper or cotton bags, so in case of further bickering over this matter these will be resorted to.

Secretary Thurstone of the *Merchant's Exchange* has compiled the following report of what is termed Buffalo mills, which include Niagara Falls. Capacity of city mills, daily 4,100 bbls., output 1888, 644,563 bbls. against 720,414 in 1889. Capacity outside mills 5,750 bbls. daily; output 1888, was 818,944 against 846,295 bbls. last year. Grand total capacity, 16 mills, 9,850 bbls. daily. Output 1888, was 1,458,607 bbls. against 1,566,709 in 1888.

There is apparently no success to be found in managing the Attica, N. Y. mills since Mr. Blane left them. Mr. Eldred has given way for Edwin Fox of New York, after eighteen months of hard work. You cannot sell your flour for \$4.50 per bbl. which cost \$5.50 to make. Too many clerks, and if the head one should be a decidedly "poor hoop," it makes all the difference in the world on the right side of the ledger. The new management has shown great wisdom in cleaning out the whole establishment; getting a fresh start as it were, which is the only way to demonstrate whether this mill is a "looser" or not. Success to the new establishment.

The Urban mill is ready to start up again and will begin on some heavy orders after a long shut-down. If you want something handsome in the calendar line, send word to genial George Urban, Jr., marked "personal." It is his own idea and like everything coming from that quarter is original.

Mr. F. S. Sherwin's trial will take place next week. I think his prosecutors had better drop this case, as some very unpleasant facts concerning elevators will be made a little too public for the good of those elevator owners who are altogether too new in the business. "Steve" has a big scheme on hand down

South with plenty of capitalists on hand to back his grit, and he is therefore anxious to have the trial closed. Brother H. will remain in Canada according to the latest decision. Canada seems to prefer his stripe to the honest color. What a nest of infernal scoundrels she has within her borders.

Weighmaster has returned from his annual "bug-hunting" trip to the Sunny South. A. J. Sawyer is still in Florida enjoying himself. Mr. George B. Matthews is looking decidedly well for one who has been so sick as he has been, but lacks strength. I would advise him to take some of the favorite tap of his partner Mr. Shoellkopf. The "old man" has used it since childhood and is hale and hearty, with a head filled with more sense than is usually allowed men of his age. His last venture, that of erecting an immense building on the corner of Washington and Chippewa streets, is an honor to him.

Mr. George Urban, Jr., disappeared from the floor of the *Exchange* suddenly one day last week and has not been seen since. To follow this side-wheel twin-screw miller for the brief space of ten minutes, would puzzle an Indian. "Better stop 'round, going to cut a water-millon pretty soon," cries C. H. Warfield, born in Missouri, raised in Peoria, Ill., and civilized in Buffalo. "Charlie" is a believer in higher prices for Duluth wheat, but has sold nearly 200,000 bushels to his customers during the past month. "You are getting this wheat dirt-cheap, remember what I tell you," is his usual remark, after making a sale. His Peoria friends perhaps would like to hear that he is the happiest man on the Board, since he settled down to enjoy married life. There is none of that "Jack Cade" left in him. He can tell a Sunday School story as of yore, has quit using tobacco of the fine-cut variety, smokes little, never goes out "to see a man" and sticks up for the old democratic party like thunder.

At the regular meeting of the Car Service Association, held here March 13th, a full hearing of the demurrage charges was had. The meeting was a love-feast and there is no doubt our merchants will get what they should have, namely, a reasonable time after notification to dispose of and unload cars, say four days. It is simple justice and puts our grain-men in particular, in shape to compete with other points. The car-grain business has been nearly ruined by the arbitrary rules laid down by railroads bringing the stuff here and taking their own time in moving it out. One dealer, Mr. W. P. Andrews, has become sick of the trade and is seeking something wherein talent is appreciated. He has a thorough knowledge of the elevator business, having been private secretary of the late Thomas Clark and for years one of our most active winter wheat receivers.

New York is taking our hard wheat at the rate of 200,000 bushels per week, and the decrease next Monday will astonish those who imagined we would have an over-supply. If the mills were running full time, not a bushel would be left here, by the end of this month, and as it is the present stocks will show

little if any remaining by the opening of navigation. April 15th, is usually set down as the date for the opening, but can we depend upon it this year, is the question? How the boys will "lick salt," if May would be well advanced, before the route between Buffalo and Duluth is clear of ice.

A. P. Wright & Son have not yet resumed business. A. J. Wright who has been in New York for the last three weeks making a settlement with a stock-broker there, returned to-day.

BUFFALO.

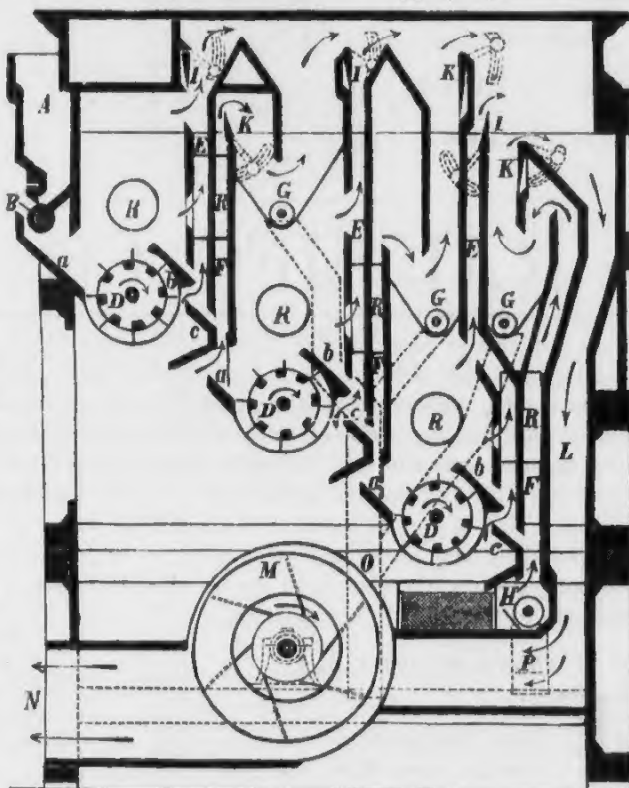
Buffalo, N. Y., March 15, 1890.

MIDDINGS PURIFIER WITHOUT SHAKER OR SIEVES.

BY A. MILLOT, OF ZÜRICH, SWITZERLAND.

THIS purifier (see cut) differs from all other machines, serving the same purpose, through the absence of all sieves and shaking gear—a new working-part having been introduced, viz: winged-rollers, which toss up the middlings to be cleaned, thereby exposing them to a stronger air current than could be attained through a free fall.

All middlings, before being cleaned, are sized, and each size is transmitted to the machine separately; consequently it cleans but one size at a time. The middlings enter the hopper, A, from whence



the feed roller, B, carries them to the machine. Dropping from the feed roller, they slide over a slanting board, a, and are carried within reach of the winged-roller, D, which makes 400 revolutions per minute and throws the middlings into a receptacle above, where they are exposed to the action of a suction fan. The fine particles, bran dust, are carried away by the air-current, while the heavier middlings fall onto the sliding board, b—placed above the winged-roller—at the end of which they are exposed to a rising air-current passing somewhat compressed through tube E. The middlings having twice been cleaned in this manner, now run over the slide board c, and in falling from the same are exposed to the also somewhat compressed air current arising through the tube F, which carries off the light particles, but allows the medium heavy to drop into the conveyor G, which is placed at the end of tube F, where the air-current is given an opportunity to expand. The run of middlings has thus been exposed to the wind three times; this procedure is repeated twice, so that the middlings are exposed to the action of the air-blast nine times. The purified middlings finally arrive at the spiral conveyor H, which carries them out of the machine through the opening P. The air-current is adjusted by moveable slides, I and K (see cut). The suction fan M draws the bran dust through

the tube L and blows it through the exit-opening N into the dust collector. The spiral conveyors empty the offal through the tube O. The windows R serve for observing the action of the machine.

The machine is belted from the shaft of the suction fan M; is then carried to the middle winged-roller, from which the two adjoining winged-rollers are driven. The suction fan should make 450 revolutions per minute.

This machine is better adapted to the dressing of heavy hard middlings, than to the cleaning of soft fluffy middlings and dunst.

A GREAT FREIGHT YARD.

THE Baltimore and Ohio's new yard at Berlin, Md., will be about two miles long by 500 feet wide. The main tracks will spread at either end and bind upon each side of the yard. The main sidings, one on each side of the yard, will be immediately inside of and parallel with the main passing tracks. Inside of and parallel with the main sidings are the bases of the diagonal, from and between which are laid the diagonal tracks running at an angle of about 30°. Of these diagonals there are to be 70, each with a capacity of 45 cars, on the basis of 37 ft. space for each car, measuring from bumper to bumper. This gives the yard an aggregate capacity inside of the base of 3,150 cars. Each diagonal will connect with the base on either side by easy switches. The bases will connect with the main sidings, at intervals of 10 diagonals, but such connections may be increased to any number desired. The main tracks will have only two connections with the yard one at each end, so that passenger trains may not suffer the slightest delay. The diagonal tracks are to be numbered from 1 to 70.

Each diagonal will be reserved for its own particular train. For instance, Nos. 1, 2, 3 and 4 may contain all cars intended for Locust Point, and none other; Nos. 5 and 6 only those for Camden station; Nos. 7, 8 and 9 for Philadelphia; 10 and 11 for New York; 12 and 13 for the Valley; 14 for the Hagarstown Branch; 15 and 16 for Washington; 17, 18, 19 and 20 for Pittsburgh Division; 21 to 30 for the Baltimore and Ohio Southwestern, etc. So that in ordering out an engine and crew for a Locust Point run, say, the yardmaster simply directs: "Find your train of 25 cars (or 30 or 45 cars, as the case may be,) on No. 2." By the peculiar construction of this yard there is no danger, it is claimed, of blocking it. Thirty to forty switching engines can work in the yard at the same time without interfering with one another. Incoming freight trains will pull into the main siding from the main track at the end of the yard, and from the main siding to the base, where it is left to the switch engine, the main line locomotive and crew proceeding to the round-house.

The round-houses, ware-houses, etc., are to be at the west end of the yard. The entire yard will at night be bright as day with the use of electric arc lights.

It is probable that the officials will in the near future increase the length of freight trains to 45 cars; 28 is the usual number hauled by one locomotive at present.—*Baltimore Sun*.

CATARRH.

CATARRHAL DEAFNESS—HAY FEVER.

A New Home Treatment.

Sufferers are not generally aware that these diseases are contagious, or that they are due to the presence of living parasites in the lining membrane of the nose and eustachian tubes. Microscopic research, however, has proved this to be a fact, and the result of this discovery is that a simple remedy has been formulated whereby catarrh, catarrhal deafness and hay fever are permanently cured in from one to three simple applications made at home by the patient once in two weeks.

N. B.—This treatment is not a snuff or an ointment; both have been discarded by reputable physicians as injurious. A pamphlet explaining this new treatment is sent free on receipt of stamp to pay postage, by A. H. Dixon & Son, 337 and 339 West King street, Toronto, Canada.—*Christian Advocate*.

Sufferers from Catarrhal troubles should carefully read the above.

MILWAUKEE REVIEW.

The output of flour at this point did not reach 100,000 bbls. during the last 30 days. None of the mills were pushed with work, while two or three were idle for one reason or another.

The Phoenix, E. Sanderson & Co., has been under repair since Febr. 1, and will not be started until April 1. Her power has been overhauled and renewed. The mill interest of the Sandersons has been merged into a stock company, and the organization will be completed and in working order before the mill is ready to start.

The Sandersons are largely interested in real estate, mines and other lines, and their greatly diversified interests made the above company necessary in order to do justice to all lines.

The condition of the Milwaukee milling and flour interests are not encouraging, nor has it yielded any considerable profits to the managers and operators since my last report, Feb. 15. There is some diversity of opinion respecting future prospects.

One of our millers reports good demand for Patents, and believes in a good trade for the balance of the crop year. All others approached replied: "No sales, no demand, except for mill-stuffs which are strong and higher and in good demand. We are sold ahead, but can't deliver. What shall we do? we can't grind up the wheat for the sake of selling the bran only." This condition, however, is not confined to this locality. Country mills and even Minneapolis and St. Louis share the same fate.

This is a little singular when we consider how cheap corn and oats—the great feed products—are.

Good sacked bran is selling for from \$10.25 to \$10.50 per ton, sacked fine middlings \$11.25 to \$11.50, while coarse ground corn is but \$11.00, and choice feed of corn and oats \$11.00 to \$12.00.

The weakness in ocean freight has stimulated the export business a little, but the disposition to buy flour for future delivery is growing less every day, and for no other reason than the wretchedly slow and careless way in which these same ocean freight lines fill their contracts to forward goods. When buyers of American flour have to wait four and five months for the delivery of goods that should, according to contract, and could easily reach their destination in 60 to 70 days, there is no wonder that orders are scarce and we get the advice: "Only spot stuff is in demand."

I have before advised the abolishing of the practice of consigning flour and still insist that it is a dangerous practice, but this freight business puts another horn to the dilemma. The miller that wants to hold his foreign trade is reduced to a choice between consigning, so that he may be able to sell spot or take the consequences of this 4 to 6 months system of delivery.

If there are not some big damage suits brought along this line soon, then I am neither a prophet nor the son of a prophet.

The lake lines are owned by the Trunk Ry. lines. If the ocean lines are not in the same condition, they certainly are working under agreements with them that make them practically the same, and they advertise their sailings several weeks ahead.

Why not bill for certain sailings and hold them to reasonable performance or damages. Do some thinking along this line.

They will hold you for non-delivery. Why should this rule be onesided. Possibly this may be the key to the situation. Think of it, fellow shipper, and when you come together in the Millers' National Convention, act, for this is the first duty before you.

In connection with this it may be well to consider the action of the North Atlantic S. S. Line in the matter of the

London clause. A prominent London firm are out in a circular to their millers, urging shipments by that line, as they are the only line delivering flour without the 1s. 2d. per ton imposed by that clause, and they state this has recently been advanced to 1s. 6d. Fellow exporters, these great lines that are called common carriers and popularly believed to be your servants, have become your masters. Not content with exorbitant freight rates, they must needs add this tax of 1s. 6d. and we are told this can and will be increased as fast as they find it to their advantage and no vigorous protest against it. Receivers on the other side are up in arms against it.

Don't.

THE flour production in Milwaukee during February was 91,700 bbls., against 138,950 in January, and 105,960 the corresponding month in 1889.

A MILWAUKEE Company placed in the Auditorium building Chicago, over 100,000 feet of pipe covering. Perhaps no building in America has required as much pipe covering.

THE Sanderson Milling Company has been incorporated with a capital stock of \$300,000. The incorporators are William Sanderson, Henry B. Sanderson and Geo. D. Van Dyke.

THE MILWAUKEE FIBRE AND LAND CO., incorporated by Arthur W. Armbruster, F. W. Erbacher, W. C. Cogswell and G. B. Seaman, will manufacture fibre from the sisal hemp plant on the Island of New Providence, in the Bahama Islands, and sell the product in Milwaukee.

MESSRS. EDW. P. ALLIS & Co. have recently issued the third number of a series entitled "The Kind of Mills we Build." It is very suggestive to the miller who proposes to invest capital in a milling plant, as well as creditable to the firm able to design and erect such mills.

MR. SAMUEL S. GREGG, late salesman for the Link Belt Machinery Company, has been appointed assistant superintendent for the Weisel Vilter Manufacturing Company, Milwaukee. Mr. Gregg, in addition to his mechanical engineering experience, has seen sea-going service as an engineer.

THE Chamber of Commerce Committee, appointed to present a protest to the elevator managers against the proposed increase in rates, reported at a meeting of the Directors, March 11, that the elevator men had refused to grant the committee an interview, but had informed it that the rates would have to stand. The action of the elevator men was sharply criticized.

ALTHOUGH the past month has not been an active one in mill-building circles, still Messrs. Edw. P. Allis & Co., of this city, are able to report the following desirable orders: A complete 30-bbl. roller mill for Sampson, Ray & Co., West Newton, Pa.; a 30-bbl. mill for M. W. S. Benfer, Beaver Springs, Pa.; machinery for a 30-bbl. mill for C. C. Miller, Clayville, Pa.; for a 75-bbl. mill for Faggard & Langston, Alexander, Tex.; a 40-bbl. complete roller mill for H. W. Vogel, Wilton, Wis.; the remodeling of the 500-bbl. mill of Globe Milling Co., Watertown, Wis.; machinery for 50-bbl. mill for Cedar Springs Milling Co., Cedar Springs, Mich.; for D. R. Barber & Son, Minneapolis, six No. 4 flour dressers, 8 No. 3 flour dressers two double 9x18 and one double 9x24 roller mills; for Galaxy Mill Co., Minneapolis, Minn., seven double 9x24 roller mills, 30 No. 4 flour dressers, 12 No. 4 Reliance sieve scalpers and graders; for Aug. Wolf & Co., Chambersburg, Pa., 10 double 9x24 roller mills; for C. A. Pillsbury & Co., Minneapolis, Minn., 14 Gray improved centrifugal reels for the Anchor mill; for Kings County Milling Co., Brooklyn, N. Y., two double 9x18 porcelain roller mills, two double 9x24 roller mills, and one No. 2 flour dresser; for the John T. Noye Mfg. Co., Buffalo,

N. Y., one Reliance purifier; for Palisade mill, Minneapolis, 20 double 9x24 and 9x30 roller mills. Small orders to a great number have also been received by their flour-machinery department. The engine department, as usual, is crowded with work, and large additions will be made to the Reliance Works this year.

WISCONSIN STATE MILLERS' ASSOCIATION.

SECRETARY'S OFFICE.

MILWAUKEE, Wis. March 17th, 1890.

The regular annual meeting of the association will be held at the Plankinton House, this city, Tuesday, April 8th, at 2:30 P. M.

Business to come before the meeting will be the election of officers, and of a member to serve on the National Executive Committee. There will also come before the meeting for the discussion the general adoption of a uniform export bill of lading, matters pertaining to export and domestic trade, and arrangement of details for a large attendance to the meeting of the National Association to be held in Minneapolis June 17th to 20th. A full attendance is desired.

Very respectfully,
S. H. Seamans, Sec'y and Treas.

ELECTRICAL TERMS IN COMMON USE.

NOW that so much discussion is going on in the papers concerning the proposed method of execution by electricity, we are constantly meeting with the words "ohm," "ampere," "volt" and others, the meanings of which are not familiar to us. The following definitions will straighten them out to a certain extent:

CURRENT.—A current, in the electrical sense, means a flow of electric force through a wire or some other conducting substance. A **CONTINUOUS** current is one which flows all the time in one direction. An **ALTERNATING** current is one which flows first in one direction and then in another, the reversal in directions taking place very rapidly. A Westinghouse dynamo gives about 150 reversals a second.

AMPERE.—Some currents of electricity are more powerful than others, and it is customary, in speaking of their intensities, to compare them with a standard current called an **AMPERE**. An ampere is of such a strength that it will decompose 5½ grains of water per hour. The name comes from Ampere, a celebrated French electrician.

DYNAMO.—This word is derived from a Greek word meaning "power." A dynamo is a machine for converting mechanical energy into electricity.

RESISTANCE.—By this word is meant the opposition that a wire or other conductor offers to the passage of a current of electricity. Thus it will be readily understood that it is not so easy to send a given current of electricity through a long wire as through a short one; nor through a little one as through a big one.

OHM.—This is the unit of electrical resistance. Resistances are compared with one another by stating how many ohms they are respectively equal to. A wire of pure copper that is 0.056-inch in diameter and 100 yards long, offers a resistance of one ohm to the passage of an electric current. The word "ohm" comes from the name of a German electrician—G. S. Ohm.

ELECTROMOTIVE FORCE.—By this is meant the electrical pressure that a battery or a dynamo can get up. The higher this electrical pressure is, the greater is the current that the dynamo or battery can send through a given resistance.

VOLT.—The volt is the unit used in estimating electrical pressures. An ordinary Daniell's cell—or a cell of gravity battery, such as is used in telegraphing—is capable of giving an electrical pressure of almost exactly one volt. The pressure (or electromotive force) given by dynamos varies greatly with the style of

machine, and the speed at which it is run. Edison dynamos give about 110 volts, and Westinghouse dynamos about 1,000 volts. The word "volt" is taken from the name of an early Italian experimenter—Volta.

ELECTRODE.—This term is used rather loosely, and may be considered to mean the same as the **POLE** of a battery or a dynamo. Oftentimes it stands for the metal plates or wet sponges that are connected to the poles of the battery or a dynamo and applied to the person under treatment.

WHEATSTONE'S BRIDGE.—This is an instrument devised by Wheatstone, an English electrician, for measuring resistances.

The confusion that exists in the public mind in connection with these electrical terms comes not only from their newness, but also from the unintelligent way in which newspaper reporters and even editors use them. Thus an article lying before us at the present moment, which professes to straighten out some of the crookedness associated with them, contains numerous references to *currents* of such and such a number of *volts*—expressions that are quite meaningless, since *currents* cannot be measured in *volts*. *Resistances* are measured in *ohms*; *currents* are measured in *amperes*; *electromotive forces* (in other words, *electrical pressures*) are measured in *volts*. When we read about "1,000 volts of an alternating current" being fatal to life, we must understand that what the writer meant to say was that "the current of electricity that will be caused to flow through the human body by an alternating electrical pressure of 1,000 volts" is fatal to life.

The following, taken from the *Independent*, will be found of interest on account of its connection with the subject we have been discussing: Mr. Elbridge T. Gerry, who was chairman of the commission appointed by the Legislature in 1886, to investigate and report upon the most practical and humane method of executing criminals, told on the stand how thorough and exhaustive the work of the commission had been. Over forty ways of killing were considered, and thousands of authorities were consulted. All the books of all ages and all nations, treating on criminal execution, that could be obtained were examined, and the commission finally agreed that electricity would, on the whole be the best agent for taking the life of criminals. He said the commission held that there were four methods preferable to hanging, and he named them in order to their preference: (1) the guillotine; (2) the garrote; (3) the hypodermic injection of prussic acid; (4) electricity. The guillotine was rejected because of the effusion of blood and the associations of the instrument; the garrote because its use by Spain and her colonies condemned it in the public opinion in this country; and prussic acid because of its unpleasant character and the difficulty of administering it properly.—*The Locomotive*.

A SUBMARINE BOAT.—Some remarkable things have been told of the Spanish submarine torpedo boat, the *Peral*, and these seem to be confirmed if correct reports are given of tests recently made at Cadiz. From these accounts it appears that the speed of the of the boat when running on the surface was about 8 knots an hour, while under water she ran between 5 and 6 knots an hour. The boat was navigated for over three hours with all connection with the outer air completely shut off, and for more than two hours in fighting trim, with only 4 inches of the observation turret above water. One continuous trip of 40 minutes was made with the boat entirely under the water, during which time she traveled about 4 miles. The machinery is said to have worked without the slightest trouble, and during the submarine trips the crew did not experience any inconvenience whatever.—*Engineering Jour.*

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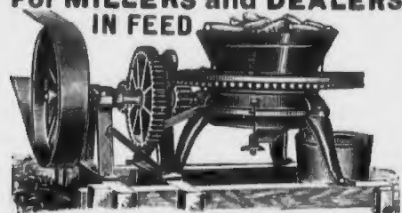
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100 LESSONS IN BUSINESS.

63
48
3024

SHORT-CUT.

8x3=24. Put down both figures and carry one, (always carry one.) 5x6=30. Put down both figures, and you have the product 3024.

Something New.

LESSON 14 of "One Hundred Lessons in Business" explains a multiplication rule which is turning the arithmetic of the country upside down or rather right side up. It is really one of the best things ever published, and the whole matter is so simple that it is a surprise to every one that it was not thought of long ago. For instance, take the first example given at the left: say 8 times 3 are 24 and put down both figures. Carry one and say 5 times 6 are 30, and put down both figures (Always carry one.) Of course this rule does not apply to all numbers, but it applies to an immense number. By three minutes study of this lesson as given in the above named book, the smallest school children can tell at a glance which numbers will work and which will not. It is more than likely that you have spent hours finding the value of certain things at certain prices, when the work could have been done in minutes. The rule applies to whole and fractional numbers of two, three and four figures. This lesson represents only one one-hundredth part of the book. The work is brim full of new points. Here are the titles of a few of the other lessons:

46
27
1242

82
49
4018

96
38
3648

43
84
3612

88
55
4840

63
29
1827

64
38
2432

What Successful Men Say of Success and Failure.—Rapid Addition Made Easy.—Business Fractions and How to Handle Them.—Civil Service Method of Addition.—Proof of Addition in Ten Seconds.—Proof Multiplication in Ten Seconds.—How to Mark the Prices of Goods.—Hints and Helps for Corresponding Clerks.—Hints and Helps for Invoice Clerks.—How to make Change.—How to apply for a Situation and Get It.—Five New Points from Iowa.—The Five-Four-Five Interest Method.—New Method of Multiplying by the Teens.—How to make and Endorse Promissory Notes.—Hints on Advertising.—Wanamaker's Discount Rule.—The Detroit and Canadian Interest Rules.—French and Italian Methods of Division.—New Method of Averaging Accounts.

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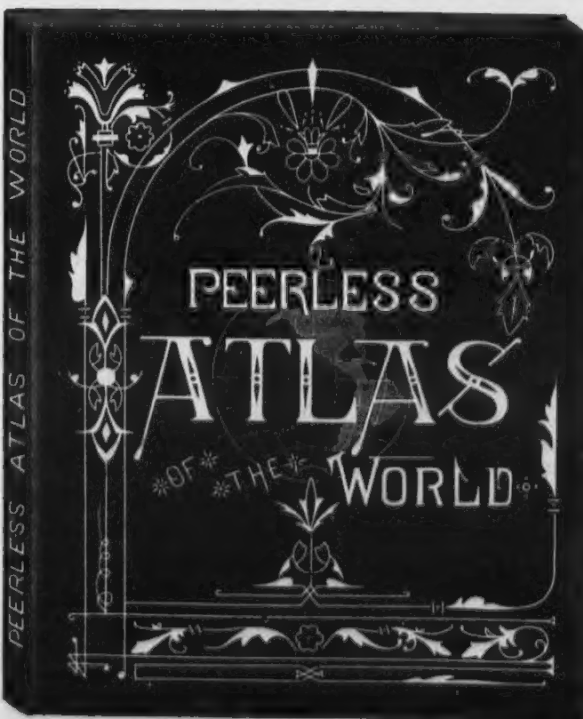
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THE WORLD'S WHEAT.

IN a late issue of *Dornbusch*, H. Kains-Jackson has the following interesting matter relative to the probable future of wheat supplies:

America, in 1890, has but about the same area as in 1880.

Canada, making considerable promises in recent years, has not fulfilled them in respect to exporting wheat.

Egypt sends now but trifling quantities.

Spain is no longer represented as a source of supply for wheat or flour.

France, which once forwarded much best quality flour to the United Kingdom, scarcely forwards now a sack.

Germany still sends of its best wheat, perhaps 800,000 bushels in the year, but Baltic supplies are probably not a tenth of what they once were.

India is one of the new great powers of wheat supply, but has not advanced as a source in the last three years; moreover, about half of India's shipments do not come to the United Kingdom.

Australia has to be reckoned with. Advance Australia! You are a wheat seller to England of perhaps 4,000,000 bushels in your best seasons!

Russia's statistics do not go back many years. The 1889-90 exports are not expected to equal those of the previous two seasons.

Other countries, clumping together, Persia, La Plata, Chili, etc., do increase their wheat shipments, but not to an important extent.

England, lastly, has considerably diminished its wheat area.

Hands all around—all together, the world's wheat supplies to the United Kingdom in the last ten years have only just about balanced ten year's demand, nor are the world's wheat reserves increased!

Looking at the other side of the medal at the increased consumption of wheat in the last ten years—what do we see? America, at home, is eating more, it is stated to the extent of 64,000,000 bushels.

The United Kingdom now calls for fully 144,000,000 bushels of wheat and flour, say 32,000,000 augmentation, in ordinary seasons.

France is now a yearly buyer of wheat 16,000,000 to 24,000,000 bushels more than was usually the case ten years ago (always putting aside the special imports following the woeful harvest of 1879).

Other Continental buyers, Belgium, Holland, Italy, Switzerland, Portugal, etc., together form a great wheat-buying power that scarcely existed ten years ago.

As a summary, one may say Europe wants and takes all the wheat, the barley, the oats, the potatoes, the seeds that its own soil grows, supplemented by the surplus production of other countries. The year eats up the year!

PATENT VICTORIA PURIFIER.

THE illustration below represents the Patent Victoria Purifier which has been making considerable headway during the last few months in England. Since November 1889 there have been 171 of these purifiers sold to 56 millers.

The leading and novel feature of this purifier consists in the use of a vibrating tray of nozzles, covering the whole area of the sieve.

The construction of the tray of nozzles is as follows:—A flat tray is fixed above the sieve surface, and a large number of small holes are made in the tray close to each other. Each of these holes is fitted with a nozzle on the top side of the tray. The nozzles are hollow, and they are wider at their base than at the top for the purpose of causing the air rising through the interior of the nozzles to become accelerated in its velocity on all sides. Each nozzle has a small discharge orifice, and the centre of the orifice is placed at a small distance from the sieve surface. The air discharged from each

orifice is expanded the moment it leaves the orifice, and thereby the impurities carried up through the nozzles are deposited on the upper surfaces of the nozzles and the tray, from whence they are removed automatically by the vibratory motion of the tray.

By this arrangement in the Victoria Purifier, the highest quality of purification is claimed to be attained with a smaller quantity of air than has hitherto been possible and for the first time in the history of milling, with the further important result, that the air from the fan is perfectly free from dust, and it may be discharged into the open room where the purifier is at work, without the use of setter cloths inside the purifier, or dust collectors, cyclones, or store rooms outside the purifier.

The vibrating sieve frame is carried by adjustable hangers and is actuated by an eccentric shaft, carried by two outer bearings fixed at the head of the machine.

The eccentric shaft is fitted with one center eccentric bearing for giving motion to the sieve frame. The two outer bearings and the center eccentric bearing are adjustable so that the wear of the three bearings may be taken up during work.

The vibrating sieve covering is made up in separate sections which are carried by the main frame. Each section can be quickly removed or changed or recovered with clothing to suit any class of material. The feed is fitted with a roller feeder, arranged to feed automatically.



The upper surface of the vibrating sieve may be examined, when required, while the machine is at work by removing the vibrating tray of nozzles, which is so constructed that it can be removed and replaced without stopping the machine.

The vibrating sieve and the frame of the machine are fitted with a patent airtight flexible connection on all sides to ensure that there is no loss from air leakages, also that all the air drawn in by the exhaust fan is compelled to pass through the material being purified.

Owing to the close proximity of the patent vibrating tray of nozzles to the surface of the sieve and to the form of the nozzles themselves the air currents, laden with their contained impurities, have the shortest possible distance to travel from the time they are separated from the good material to the sieve to the time at which they are discharged on the outside of the vibrating nozzles, and upon the upper surface of the vibrating collecting tray.

The vibrating tray of nozzles is expressly designed for the purpose of allowing the air, laden with impurities, to be largely expanded, whereby the impurities are rapidly deposited, collected and automatically removed.

This purifier is manufactured by Higgenbottom & Co., Milling Engineers, of 32 Seel Street, Liverpool, England.

THE TRUST MANIA AND ITS CURE.

IN an article with the above title, the *New York Engineering and Mining Journal* says:—

Every industry in the land appears to be falling into the hands of so-called "trusts" or combinations, which have for their objects to restrict competition and to increase the selling price of their products. We have, on many occasions, called attention to the inevitable result of these efforts to make the public pay for the support of antiquated and expensive producing works, or for the losses which ignorance or extravagance would entail. The object now apparent in most cases of "trust" organizations is simply to make the dear public believe that "trust stocks" are good investments, and to unload these "securities" on them as readily as possible.

Many of the unwary will later on pay dearly for their education in this matter; but in the meantime it is well for proposing investors in "trust stocks" to consider the legislation already proposed or enacted in several states for the treatment of this trust mania.

Take for example the following extract from a bill passed recently by the Michigan Legislature, and said to have been drawn by a lawyer who has been the presiding Judge of the Supreme Court of the state. It provides "that all contracts, agreements, understandings and combinations made, entered into, or knowingly assented to by and between any parties capable of making a contract or agreement which would be valid at law or inequity, the purpose or object or intent of which shall be to limit, control, or in any manner to restrict or regulate the amount of production or the quantity of any article or commodity to be raised or produced by mining, manufacture, or any other branch of business or labor, or to enhance, control or regulate the market price thereof, or in any manner to prevent or restrict free competition in the production or sale of any such article or commodity, shall be utterly illegal and void, and every such contract, agreement, understanding, and combination shall constitute a criminal conspiracy." Organizations of workmen are excepted from the operation of the act.

This bill, whether good law or not, is certainly one of the most concise, comprehensive and rigid measures we have yet seen, and it is well worthy the careful consideration of all who are tempted to invest in these so-called "trust securities."

MILLING AND MECHANICAL NOTES.

(Condensed and compiled from various sources for the UNITED STATES MILLER AND MILLING ENGINEER.)

To choose a flat file turn its edge up and look along it, choosing one which has an even sweep from end to end, and having no flat places or hollows. To choose a half round file, turn the edge upward, look along it and select that which has an even sweep and no flat or hollow places on the half-round side, even though it be hollow in the length of the flat side.

THERE is a class of men, who when they buy a boiler, get the lowest figure regardless of quality, and pride themselves on making a sharp bargain. The price is stipulated, but no specifications whatever are given, and if the boiler was entirely void of braces it would not do for the engineer who is unfortunate enough to have any such magazines to run, to say they were not perfection.

CAN IRON BE GLUED? By a new method of cementing iron, the parts cemented are

so effectually joined as to resist the blows even of a sledge hammer. The cement is composed of equal parts of sulphur and white lead, with a proportion of about one sixth of borax. When the composition is to be applied it is wet with strong sulphuric acid and a thin layer of it is placed between the two pieces of iron, which are at once pressed together. In five days it will be perfectly dry, all traces of the cement having vanished, and the work having every appearance of welding.

THERE was a time, not very many years ago, when low grade flour was accounted of no importance. Now, however, the miller finds it worth the while to make as white and clear low grade as possible. The market, I know is flooded with low grades, but a well dressed lot is almost certain to command a fair price, without consignment to foreign countries, while a poor low grade has often to be sold at a loss. I believe many millers can bear me out in this assertion that low grades often sell at a sacrifice. Such, at any rate, has been my experience.—*The Roller Mill*.

GEORGE HAWKS of Goshen, Ind., writes: "A very important man is the grain-weigher, for with the best of machinery, good millers, good flour men, a poor lot of wheat cannot but yield poor goods. So he should be able to detect must and rust as easily as cheat and cockle in the grain. He must also be one who possesses or cultivates amiability and uses tact and judgment when he is accused of taking the two bushels that have been left at home, or lost on the road, a thing which often happens.

THE question of burning coal in a wet or dry state is still being discussed, a large amount of both theory and practical information being set forth. The results of a series of tests made recently with much care are regarded as having considerable weight in the determination of the points involved. It appeared that a mass of washed slack, holding 18 per cent. of water and 9½ per cent. of ash, evaporated 5½ pounds of water per pound of fuel, while the same coal, with only 3 per cent. of water, made from 8 to 8½ pounds of steam. Making due allowance for moisture by reducing to a standard of like quantities of coal free from moisture, a direct loss of 14 per cent. is shown in using wet coal.

THERE seems to be a prevailing idea among many proprietors that anything that can be poured upon the journals of a machine provided it is cheap, is a good enough lubricator, but this is a mistaken idea. The old maxim "the best is the cheapest," is as applicable to the oils used in a mill as to anything else, and the oil that is used, no matter whatever it may be that is free from gum, and will give the best results with the least amount used is the cheapest in the end, no matter what the cost may be per gallon. There is no doubt but the reckless and wasteful use of oil that is indulged in by the operators in many mills has led the proprietors into purchasing a cheaper article under supposition that the operator will use about the same quantity regardless of the quality. But this is not always necessarily the case.—*Tompkins*.

A NEW METHOD OF TREATING DISEASE.

Hospital Remedies.

What are they? There is a new departure in the treatment of disease. It consists in the collection of the specifics used by noted specialists of Europe and America, and bringing them within the reach of all. For instance the treatment pursued by special physicians who treat indigestion, stomach and liver troubles only, was obtained and prepared. The treatment of other physicians celebrated for curing catarrh was procured, and so on till these incomparable cures now include disease of the lungs, kidneys, female weakness, rheumatism and nervous debility.

This new method of "one remedy for one disease" must appeal to the common sense of all sufferers, many of whom have experienced the ill effects, and thoroughly realize the absurdity of the claims of Patent Medicines which are guaranteed to cure every ill out of a single bottle, and the use of which, as statistics prove, has ruined more stomachs than alcohol. A circular describing these new remedies is sent free on receipt of stamp to pay postage by Hospital Remedy Company, Toronto, Canada, sole proprietors.

(Written for the UNITED STATES MILLER AND
MILLING ENGINEER.)

MILLING THOUGHTS.

BY J. F. MUELLER.

V.

IT has been said: "He that despoiseth little things, shall perish by little and little." Neglect of little things has ruined many fortunes and marred the best of enterprises. In no enterprise is this more apparent than in the operation of a flouring mill. "It will do," is the common phrase of those who neglect little things. "It will do," has blasted many a fortune, burned many a mill, and irretrievably ruined thousands of hopeful projects. It always means stopping short of the right thing. It is a makeshift, a failure and a defeat. Not what "will do," but what is the best possible thing to do, is the point to be aimed at. Let the man once adopt the maximum of "It will do," and he is given over to the enemy; he is on the side of incompetency and defeat; and we give him up as a hopeless subject.

Some mills are forever doomed with breakdowns. On one occasion a shaft is broken; next in order, a bolting cloth is torn into threads. The next time the babbit in the bearing of a fast running journal is melted. Thus one mishap succeeds another until the operatives fairly become superstitious. It would, no doubt be difficult, in such a case, to determine who should be held responsible for the shortcomings. The miller may blame the millwright for the botch job he has left for him to make the best of. The millwright will probably have for an excuse that he was hampered by conditions of cost or carrying out the miller's whims. As a general rule the importance of system in the arrangement of the machinery is not sufficiently appreciated. The result is that it is set in, hit or miss, requiring a labyrinth of spouts, conveyors, elevators, belts, shafting, etc., to enable it to run as intended in the diagram.

In walking through a mill it will at once be apparent whether a man is specially appointed to see after the lubrication of the whole of the shafting and machinery, and the mill, has an appearance of cleanliness about it, at least so far as the driving parts are concerned. In such a mill fewer repairs are necessary, there is a less liability to sudden and serious breakdowns and accidents to employes rarely occur. If this duty be delegated to an incompetent or careless person or, as in many instances, unfortunately, is considered to be everybody's duty to attend to lubrication, it very often happens that it is altogether neglected. It may be well to state in this connection that there is a large percentage of fire losses caused by hot journals originating from the use of bad oils. This is a hackneyed subject, to be sure, yet it cannot be called "played-out," so long as the insurance rates on flouring mills remain so high. There never was a time when greater care should be exercised in the purchase of lubricants than at present. Owing to sharp competition the market is flooded with cheaply made oils, some of which is totally unfit to use, many containing chemicals and substances that are a positive injury to machinery. The prices at which these oils are being sold is no criterion to judge them by — high prices to the inexperienced and low

prices to close buyers is generally the rule. Buyers should patronize only those who are known to be responsible.

Sometimes we see statements made by interested parties that there is no need of an engineer to run their engines, they being self-regulating, or some such term, so that it is only necessary to open the throttle and the engine will run itself. I sometimes wonder whether some of our machinery salesmen will not make similar assertions when setting forth the advantages of the machines required for manufacturing flour, viz: That mills built on their system are entirely self-regulating. There are a great many mills in which the machinery is operated as though it were capable of taking care of itself. Indeed in many cases such an ill-managed mill does take care of itself, in a manner however, quite unknown to the miller.

Where the run of a mill is thus neglected, it is evident that yields and quality of flour receive but little attention. I once called on a miller, whose mill had every indication of such management. Upon being asked what yield he was getting, he had the sagacity to say that he "made it out of about four twenty-fives." He claimed, that he seldom found occasion to make any changes in his grinding or bolting. The chances are that someone made a fair yield for him at one time and the old man concluded not to disturb the general run of things, but to let good enough alone as much as possible.

For the numerous flour mill failures in this country there are many and widely diverse reasons. Some fail for lack of capital, some for lack of a competent miller, some on account of the mill-builders' inferior work, some because there is not trade enough to support them, some on account of outside speculation on part of their owners. But it is more likely, if they could be sifted down to the bottom that in the majority of cases, millers are deceiving themselves in regard to yield. There are indeed many who are constantly laboring under a delusion. It pays to make frequent tests, and when making a test, to keep an accurate record of each step which is made and every controlling circumstance. The value of a test does not alone consist in the determination of the result sought for, but a test made to determine one thing often furnishes the data for other matters; is of value in many ways for reference, and is the more valuable the more complete the data which accompany it.

FLOUR AND GRAIN TRADE NOTES.

MILL FIRES during February, are reported as follows:

PLACE.	LOSS.
Syracuse, Ind.	\$10,000
O'Neil, Neb.	50,000
Terre Haute, Ind.	100,000
Marceline, Mo.	25,000
Westford, Ont.	30,000
Humboldt, Wis.	10,000
Champlin, Minn.	20,000
Hamburg, Ia.	15,000
Columbia, Tenn.	20,000
Total	\$280,000

A DISPATCH from Ottawa, Ont., says that an order in council has been passed fixing the tolls on wheat, barley, Indian corn, peas and rye passing through the Welland canal and the St. Lawrence canals for Montreal and ports east of Montreal at 2c. per ton during the coming season of navigation. On grain intended for Canadian ports west of Montreal, the full tolls of 20c. per ton will be levied.

THE Board of Managers of the N. Y. Exchange astonished the speculators on Saturday, March 7, by causing to be posted

conspicuously the announcement that the rule forbidding gambling in puts and calls is to be rigidly enforced, and that any member hereafter who shall margin such privilege or have any dealings with them in any way is to be disciplined under rule 32 of the By-Laws. The penalty being suspension from the Exchange. The Grain Committee are instructed by the Board to see that the rule is enforced.

THE London *Mark Lane Express* says: The British imports of Indian corn for the last dozen years have been as follows:

YEAR.	QUARTER.	YEAR.	QUARTER.
1873	9,719,980	1884	5,782,108
1875	8,434,922	1885	5,250,238
1881	8,085,771	1886	5,230,632
1881	7,912,107	1887	5,222,376
1882	4,224,300	1888	5,010,705
1883	7,345,791	1889	8,447,383

"These figures," says the journal above named, "reveal a steady demand capable of taking 4,000,000 qrs. of maize annually, without consideration of price."

THE freight committee of the Central Traffic Association has decided that the following articles only should be included in the term of grain products:

Flour, bran, middlings, mill feed, ship stuff, corn flour, cracked wheat, grits, hominy, pearl wheat, pearl barley, oatmeal, groats, cornmeal, shorts, brewers' meal, screenings, buckwheat, ground corn, cracked corn, hulled corn, oat hulls, rye flour, feed, malt, malt sprouts, malt skimmings and sprouted barley.

FROZEN WHEAT.—"A vast difference as to their seed value exists between the various kinds of poor wheat; rusted wheat and blistered (frosted) wheat if well cleaned are safe to use for seed, frozen wheat which is utterly worthless for milling, is likewise of no value for seed; it cannot produce a good crop; the more thoroughly the wheat is cleaned the better the seed resulting, and the better the crop—particularly in yield. No wheat should be seeded that has not been tested as regards its gluten and per centage of germination." —*Prof. N. D. Horner.*

PHILADELPHIA'S GRAIN TRADE.—Grain shipments to and from Philadelphia during February were very heavy. The railroads are still crowded with grain, and there is considerable delay at times to shipments. The movement of corn continues very heavy, receipts for the week being 1,266,128 bushels, and the shipments 1,002,013 bushels. The stock has increased 264,115 to 1,226,119 bushels.

The shipments of corn from Philadelphia in February were 3,000,000 bushels, being the greatest amount ever shipped in that month, and close to the best record made in a month—3,316,000 bushels in 1880. The shipments since January 1 aggregate 4,310,000 bushels, being only about 2,000,000 below Baltimore, which makes a great boast of its export business.

PILLSBURY ON BUCKET SHOPS.—When asked his opinion of the action of the Chicago board of trade in proposing to shut off all quotations from the bucket shops after March 31, C. A. Pillsbury said yesterday that he considered that it would be a good thing for the legitimate farming and milling interests of the Northwest.

"These bucket shops," he said, "are largely instrumental in causing the low prices at which grain has been selling for the past few years. Gambling in grain has grown to such an extent that the actual extent of farmers' sales, immense as it is, is but a mere bagatelle as compared with the 'wind sales' made through bucket shops. This is a step in the right direction. Another step which would cure the whole trouble would be to stop any short selling of grain except from parties who absolutely own or control the grain, and would be able to deliver the same if called upon. I do not know that this is practicable, but I believe it will be done within a very few years, even if the Constitution of the United States has to be amended in order to do it. The fact is the wheat production throughout the world has not increased any, taking it as a whole, during the last

five or ten years, and, legitimately, wheat should be worth over \$1 per bushel throughout Minnesota and Dakota. If this short selling is not checked in some way or other in five years from now wheat will sell as low as 25 cts. per bushel at the different railroad stations in Minnesota. I wish the farmers of this State would stop being imposed upon by political demagogues and men who do not know what they are talking about, and follow the lead of men whose interests are identical with their own, and who have a better opportunity to see the causes which are depressing the price of breadstuffs."

The United States the Granary of the World.

The following statement shows the relative position of this country compared with other leading producers of grain. While exceeding all, except in barley, the item of maize affords the most striking contrast. Whether used directly as food, or indirectly in meat or distilled products, maize may be safely reckoned by far the most valuable product of the United States. Its annual value does not vary much from \$600,000,000, nearly twice the value of any other agricultural product, and exceeding in value all our mineral products combined. The crop of 1886 of this cereal was below the average of recent years.

PRODUCTION—MILLION BUSHELS.

1887.	Hungary.	France.	Germany.	India.	Russia.	United Kingdom.	United States.	Total all countries.
Wheat.	141	310	104	267	290	70	442	1,599
Barley.	54	50	97	...	182	70	57	490
Oats...	59	245	243	...	599	150	639	1,835
Maize...	71	28	12	...	1,411	1,520
Total.	325	621	444	267	1,042	296	2,549	

The Government Estimate for March.

WASHINGTON, March 10.—The statistical report of the Department of Agriculture for March relates to the distribution and consumption of corn and wheat. It makes the proportion of the corn crop in the hands of growers 45.9 per cent. or 970,000,000 bushels, and of the wheat crop 31.9 per cent. or 156,000,000 bushels. The stock of corn on hand is the largest ever reported in March. The average of eight annual returns is 677,000,000 bushels; that of last year 787,000,000 bushels. The estimated consumption to March 1 is 1,143,000,000 bushels, a figure exceeded only last year and in 1886. The proportion of merchantable corn of the crop of 1889 is 85.7 per cent. exceeded in recent years only by those of 1884 and 1886. The average value of all corn on December, 1 was 28.3c per bushel. The average on March 1, was 27.9c for merchantable and 19.2 for unmerchantable, making an aggregate value of \$35,000,000 less than the December estimate.

The wheat crop of 1889 was exceeded by the crops of 1880, 1882 and 1884. The average remainder in the hands of growers on the 1st of March, for ten years has been 130,000,000 bushels. The average crop during this period is 450,000,000 bushels. The present returns are very full and satisfactory, the state agents' estimates agreeing very closely with those of the department consolidation. The result may be accepted with absolute confidence as an approximation as close as can be made by local estimates. Most of the wheat in farmers' hands is in states which have no surplus over consumption, or in those in which the larger portion is consumed at home. It is seen, therefore, that the available supply for exportation and for home distribution to July is small. The depleted farm reserves have been measurably filled, except in a few states, but it will require the pressure of high prices to squeeze any considerable proportion of them into commercial distribution.

THE Menasha Wood Split Pulley Co. have had orders recently from the Isaac Harter Co., Fostoria, O.; Wm. Johnston & Bro., New Richmond, Wis.; The Cockle Separator Co., and The Wm. Brodessaer Mfg. Co., of Milwaukee.

THE *Iron Age* estimates that 1,800,000 net tons of rails will be required in the United States this year.

THE Argentine Republic has put on a protective duty on bread-stuffs with a vengeance. On wheat it is \$1.85 per 220 lbs., and on flour from wheat or maize \$4 per 220 lbs.

FROM a letter recently received from an eastern milling engineer we quote the following:

"I have only time to glance casually over the milling papers. If I see something that strikes me forcibly with some man's name attached to it, I read it. Any man that is ashamed to put his name to an article should not be permitted to insert it in any paper. Such authors, especially critics, are like assassins who stab in the dark and are afraid to come out boldly where a man can appreciate and know what their ability is."

ITEMS FROM BEYOND SEAS.

GERMAN makers assert that their steel engraving tools possess the hardness of a diamond. The method employed is said to be to heat the tools to a white heat, plunge repeatedly into sealing wax until cold, and then just touch with the oil of turpentine.

A GERMAN miller thinks that as the rising qualities of flour depend on its dextrine properties, flour which is deficient may be greatly improved by the mixture with it of one or two per cent. of powdered dextrine. He says that as dextrine in its development in the bread changes to a form of sugar, a mixture of powdered sugar will improve poor flour, though not to the same degree as will the dextrine.

AN ingenious prisoner at Kariaus, Bohemia, recently constructed a watch three inches in diameter with no other tools or material except two needles, a spool of thread, a newspaper, and some rye straw. The wheels, posts and cogs are all made of the rye straw, which, it is well known, is quite coarse and tough. It runs six hours without winding, and keeps good time. It is now in the possession of the prefect of Kariaus, who considers it the greatest marvel of the nineteenth century.

A BIG ENGINEERING WORK.—One of the great feats of the railway engineering of the time is being performed unnoticed in Northern Queensland. A line is being constructed from Cairns to the tin mines of Herbertstown, which in mountaineering difficulties may be compared with some of the most arduous undertakings in other parts of the world. It is costing £40,000 to £50,000 a mile, and at this time reaches to 4,000 feet above the sea. A whole range of mountains has to be crossed, and the trains will pass by perilous precipices and yawning chasms.

A SOUTH WALES paper says:—"The announcement that the s.s. China, which left Barry dock on October 2d, had reached Hong Kong in the short time of 33½ days—thus beating the overland mail—is of more importance to this district than would at first sight appear. The China is a steamer of 10,000 tons burden; was built on the Clyde, and came thence to South Wales to be coaled for her long voyage. She received 2,500 tons of best—Ocean Merthyr—quality, and her quick passage has demonstrated once again the excellence of that coal, which combines all the good characteristics that distinguish the Welsh product. She is the first of a line of steamers designed to develop trade between the United States and the Chinese Empire. Several other vessels of similar large capacity are being built in Great Britain for the same line, which is an undertaking of the noted financier, Mr. Jay Gould."

It is desirable that some authoritative decision should be arrived at, if possible, as to the average quantity of flour yielded by a quarter of wheat of given weight.

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At present the authorities on the subject are not in agreement upon the question. Indeed, they diverge by more than 10 per cent. In the statistics of the Board of Trade it is assumed that 3½ cwt. of flour are equal to 4½ cwt. of wheat, each being the equivalent of a quarter of wheat; or, in other words, that wheat yields nearly 81 per cent. of flour. This is deemed too much by experts, Beerbohm putting the yield at 72½ per cent., and Dornbusch at 70. Consequently, the two corn trade authorities reckon the wheat equivalent of a year's imports of flour at a much larger quantity than the Board of Trade allows it to be, and thus there is a great discrepancy as to our total imports and consumption of breadstuffs. For example, our imports of flour in the last cereal year were equal to 4,096,603 qrs. of wheat according to the Board of Trade, and to 4,789,689 qrs. according to Dornbusch. Such a large difference is very puzzling to statisticians, and it would be well if the Association of British and Irish Millers would undertake to clear up the point in dispute. Seventy per cent. is an old calculation, and there is every reason to believe it to be too low in these days of improved milling machinery. The third calculation, 72½ per cent., is based on estimates collected from millers, but we cannot say how many. It is just possible that some of those who made the estimates were careful not to put the percentage too high when divulging what they might regard as a trade secret. On the other hand, it is not at all probable that the average flour yield of all qualities of wheat, made into flour by all kinds of machinery, is as high as 80 per cent.—*The British Baker* (London).

THE TWO RIVAL MILLS.—A Fable.

ONCE upon a time two paper-mills competed with each other, and their papers might be mistaken one for the other, they were so nearly alike in excellence. But the owners of these mills hated each other and although both mills were full of steady orders, one resolved to put down another machine and also increase his beating power, so as to undercut his rival.

The other papermaker heard of the additional plant being put into his neighbor's mill, and he also said: "I will put down another machine and will work cheaper."

They both increased their output immensely, and alike said to the stationers, "Give me orders, I must keep the mill going."

Thus for a long time they needlessly competed with each other.

But prices fell.

Profits became smaller.

Both paper-mill owners became grey, weary and financially weak.

In time they kept the mills going "just for the love of it."

An outsider saw it and said, "If you are

working at cost, then each of you advance prices a farthing per pound."

But they groaned each to themselves and said, "The other mill won't."

But each economized by reducing wages all round, and even the commission of the agent whose earnings are now less from the output of the two machine mill than when only one was running.—*Western Paper Trade*.

It has been discovered that a large portion of Utah is underlaid with a body of water which may be reached by boring wells from 100 to 200 feet. The wells flow so liberally that one of them will water 5 or 6 acres thoroughly. The desert is literally "made to blossom as the rose."

HOW A BOSTON RAT UTILIZED HIS TAIL.

A waiter at the Metropolitan hotel on Washington street, according to the *Boston Globe*, says there is a rat of unusual intelligence which haunts the hotel kitchen and when occasion offers steals food from the cook. He says this rat ought to be caught and exhibited as a marvel at the dime museums. Several stories of sagacity are told about this rodent, of which the following is one:

"A few evenings ago," said the waiter, "I had occasion to go down into the kitchen. It was dusk when I arrived, and as soon as my eyes would permit me to get used to the light I saw a large rat walk deliberately up to a dish of doughnuts and begin to take them out one by one and string them on his tail as you would string beads. When he had put on five and loaded his tail up he turned around, took the end of his tail in his teeth, and walked off as if he were going to muster."

RECENT PUBLICATIONS.

Stanley's Own Book.

Mr. Stanley has advanced so far with his account of his adventures in achieving the rescue of Emin as to be able to announce the title of his book. All sensible persons will await with patience for the publication of the authentic account, "In Darkest Africa, and the Quest, Rescue, and Retreat of Emin, the Governor of Equatoria," though there will be an abundance of Stanley literature turned out from the printing presses during the next few months. Probably the smooth-tongued book-agent will be able to convince some guileless persons that he is retelling "Stanley's Own" long before the only genuine narrative of the great traveler's heroism, privation and suffering is given to the world. Would-be purchasers should be on their guard.

THE history of army uniforms in the United States, from Revolutionary times to the present, will be the subject of a four-page supplement to the number of *Harper's Weekly* to be published February 26th. The article is from the pen of Henry Loomis Nelson, and will be adequately illustrated. Walter C. Dohm, the Princeton athlete, will contribute an article on "Training for Boys" to the number of *Harper's Young People* to be published February 25th. The Rev. Dr. Deems will contribute an article entitled "Discoursing on the Humanities" to the number of *Harper's Bazar* to be published February 28th. The same number will contain a story by Rose Hawthorne Lathrop, and a poem by the Virginian poet, Charles Washington Coleman.

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Edw. P. Allis & Co., Milwaukee, Wis., builders of complete Flour Mills, manufacturers of Flour Mill Machinery, and dealers in Supplies of every description. [Mr. 91.]

O. C. Ritter, Sta. A., Springfield, Mo., Patentee and Designer, Ritter's One Reduction Milling System. Full Roller Plants for small mills. [Aug. 90]

John C. Higgins & Son, 165 West Kinzie Street, Chicago, Ill., mfrs. of and dressers of Mill Picks. [Mr. 90.]

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N. Y. Belting and Packing Co., N. Y. Leather Belting Co., W. D. Allen & Co., Agents, 151 Lake Street, Chicago. [Apr. 90.]

Stillwell & Bierce Mfg. Co., Dayton Ohio, Mill Builders, Manufacturers of and dealers in Water Wheels, Feed Water Heaters and Flour Mill Machinery and Supplies. [Mr. 91]

Milwaukee Bag Co., No. 236 East Water St., Milwaukee, Wis., manufacturers of plain and printed Flour and Grain Bags of all kinds. [Mr. 91]

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Jas. Leffel & Co., Springfield, Ohio, Water Wheels. [1890]

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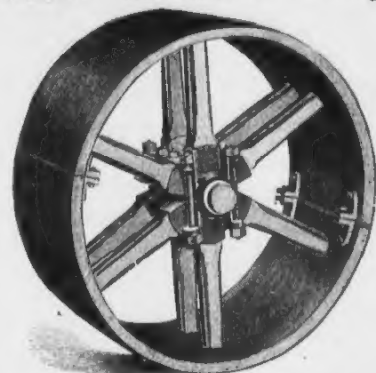
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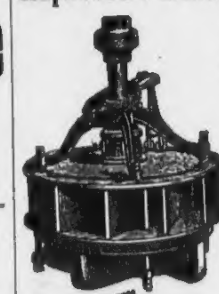
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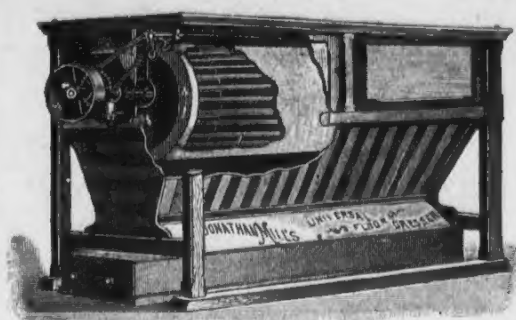
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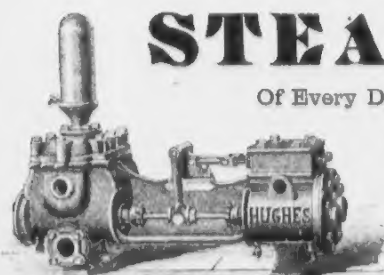
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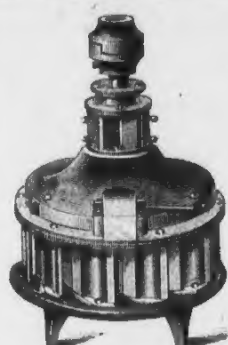
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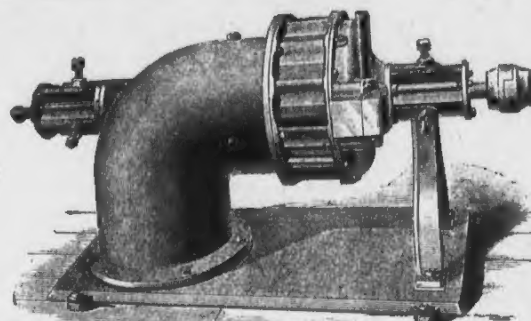


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